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Medical Times

A Monthly Journal of Medicine, Surgery and the Collateral Sciences

Published by THE MEDICAL TIMES COMPANY at 81 Fulton Street

Vol. XLV., No. 9

NEW YORK, SEPTEMBER, 1917

Fifteen Cents a Copy
One Dollar a Year

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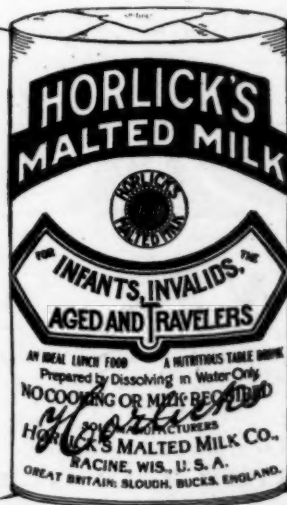
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General Scientific

APPENDICITIS COMPLICATING PREGNANCY.

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Appendicitis attacks all ages and both sexes. Though distinctly a surgical disease, it is also of great practical interest to gynecologists, obstetricians and general practitioners.

The frequency of appendicitis in the female pregnant or non-pregnant is under-estimated and its significance not fully appreciated. It is often over-looked, misdiagnosed and therefore improperly treated. The autopsy findings often bring the first intimation of the true cause of the clinical picture.

To serve our fellow practitioners, we collected, analyzed and studied the original reports of all the operated cases of appendicitis occurring during pregnancy, that are to be found in the French, English and German medical literature from 1900 to 1915 inclusive, and also some unpublished personal cases. Cases reported with insufficient data were not considered.

The subject will be discussed under the following sub-heads:

1. Incidence.
2. Etiology.
3. Combined appendicitis and extra-uterine Pregnancy.
4. Pathology.
5. Coexisting conditions.
Influence of pregnancy upon appendicitis.
Influence of appendicitis upon pregnancy.
6. Diagnosis.
7. Differential diagnosis.
(a) Maternal.
(b) Fetal.
8. Prognosis.
9. Treatment.
(a) Prophylaxis.
(b) Indication for operation.
(c) Operative.
10. Post operative sequelae.
11. Summary.

Incidence.

During the child bearing age, woman is at no time exempt from attacks of appendicitis. In forty-six of our selected cases, the age is not stated. The remaining patients were at time of operation:

Under 18 years.....	3 cases.
18 to 20 " inc.....	13 "
21 to 25 " ".....	33 "
26 to 30 " ".....	42 "
31 to 35 " ".....	23 "
36 to 40 " ".....	12 "
One patient forty-two years.	

The condition occurs in primiparae and multiparae; in first early and late pregnancies; in single and twin pregnancies. Appendicitis can coexist with other disease processes to which it may be primary, secondary or coincidental.

In the cases forming the basis of this article, there are noted thirty primiparae, twenty deutiparae, thirty-seven multiparae.

The number of previous pregnancies if there were any, is not stated in eighty-three cases. Appendicitis occurs at all periods of gestation. In some cases, the disease antedated pregnancy; some cases were operated early with reference to onset of symptoms; some late. It is recorded that operation was indicated and performed:

During the first three months of gestation.....	40 times
From 4 to 6 months, inclusive.....	60 "
From 7 to 9 months, inclusive.....	28 "
Period of gestation not stated.....	45 "

Etiology.

The etiology of appendicitis in a pregnant woman is the etiology of appendicitis in the non-pregnant woman. It is the belief of many clinicians that gestation does not exert any influence, good or bad, upon the normal appendix.

Appendicitis is primary or secondary; it may be secondary to disease of the uterine adnexa just as inflammatory diseases of the tube and ovary may be secondary to an appendicitis. Recurrent attacks of appendicitis may be precipitated by pregnancy, labor or puerperium. Pregnancy can provoke acute inflammatory disturbances in an appendix bound down by dense adhesions or containing a foreign body, one or more fecal concretions, or worms. The appendicitis complicating pregnancy may be the patient's first attack. It may have been preceded by one, two, three, or more attacks of greater or less severity.

Combined Appendicitis and Extra-uterine Pregnancy.

In some of the reported cases in which appendicitis and ectopic pregnancy were associated, it was not

determined which of the two conditions antedated the other; which was primary and which was secondary.

When an appendicitis precedes a tubal pregnancy in which it apparently plays an etiological role, the anatomical changes frequently evolve as follows:

1. Appendicitis.
2. Peri-appendicitis.
3. Peri-adnexitis.
4. Formation of inflammatory adhesions interfering with tube mobility and tube function and producing tubal malformation.
5. Tubal pregnancy.

All these conditions favor the ectopic implantation of fertilized ova. Appendicitis may hasten tubal abortion through local infection, through general intoxication, may lead to suppuration of hematoceles of fetal cysts.

To differentiate appendicitis from extra-uterine pregnancy is at times difficult. In the unruptured state, the pregnant tube gives symptoms analogous to those of chronic appendicitis. An infected hematocele presents the signs of suppurative pelvic peritonitis. Peritoneal hemorrhage due to a ruptured tubal gestation sac has symptoms closely resembling a diffuse septic peritonitis. Positive Abderhalden test, absence of fever, vaginal hemorrhage, symptoms of internal hemorrhage will point to tubal pregnancy. It is interesting to make an exact diagnosis but as both diseases are surgical affections exposing mother and fetus to serious dangers, the watchword in both conditions should be early operation. Appendicitis calls for prompt operative treatment; extra-uterine pregnancy is an emergency condition calling for immediate ablation of the ectopic fetal sac.

In all the cases of appendicitis and extra-uterine pregnancy herein considered, twelve in number, operation gave excellent results. The findings differed in nature and consequently the operative procedures varied in extent in the different cases.

Pathology.

Acute and chronic inflammations of the appendix involve the organ, in part or in its entirety, and are associated with catarrhal, fibrinous, sero-fibrinous, seropurulent, or purulent exudates present in the cavity of the appendix, in its wall, or around it. The inflammatory process may be limited to the mucous membrane, may involve part of, or the entire thickness of the appendical wall.

The appendix vermiformis may be partly or wholly intra- or extra-peritoneal. A retro-peritoneal or extra-peritoneal appendix the seat of suppurative inflammation gives rise to retro-peritoneal or extra-peritoneal pus collections. Adhesive inflammation may lead to permanent fixation of the appendix, to one or more abdominal viscera normal or pathologic, to the abdominal parietes, or to both. Inflammatory adhesions involving the tube, may angulate it, constrict it; may interfere with tubal mobility and tubal function; may change its course and play a fairly important role in the etiology of sterility. The appendix, during a 280-day pregnancy, may touch every organ of the abdomen. Pus in quantities, large or small, may be present within the cavity of the appendix, in its wall or around it. Acute suppurative inflammation of the uterus and tubes may be set up by direct extension from an acutely inflamed appendix. The walls of appendiceal or peri-appendiceal abscesses are formed in part by one or more of the following organs: uterus, adnexa, omentum, intestine, small or large, etc. An appendicular abscess may bulge into the posterior cul-de-sac, may open spontaneously into the uterus, vagina, rectum.

The inflammation proceeded to the state of gangrene in twenty-four cases; in eleven of these cases one or more perforations were present. The gangrene may be limited to the mucous membrane, may affect the entire appendiceal wall or the entire organ. Any part of the organ, tip, middle, base, may be gangrenous. Fecal concretions, one or more, were present in thirteen appendices. It is easy to understand how inflammation migrates from the appendix to the Fallopian tube, to the pregnant uterus, etc. Pelvic inflammatory processes extending by continuity or contiguity of tissue, occur in the pregnant as well as the non-pregnant. Distal pus collections are due to metastases by way of the lymph or blood channels. In the ulcerative type of inflammation the ulcer extends in depth and in surface area; when all the coats of the appendix have been burrowed through, a perforation results. The apex, the base, or any other part of the appendix may be the seat of perforation.

Coexisting Pathological Conditions.

Coexisting pathological conditions are primary or secondary to the appendiceal inflammation or merely coincidental, bearing no relation of cause or effect to it. It is not uncommon for appendicitis in the female to be complicated by or associated with tubal and ovarian diseases; salpingitis, pyosalpinx, hydrosalpinx, ovarian abscess, tube-ovarian abscess, parametritis, etc. Close anatomical association of the appendix with the uterus and the adnexa explains the frequent simultaneous involvement of these organs in disease processes.

Influence of Pregnancy Upon Appendicitis.

Upon a normal appendix, gestation has little or no influence. Upon an appendix, the seat of previous or latent disease, pregnancy exerts an unfavorable influence. It can intensify an existing inflammation. It may cause a previous inflammation to recur. In view of this possibility, many of our best clinicians recommend and practice the removal of the appendix in women married or about to be married who have had one or more attacks of appendicitis non-operatively treated.

The pregnant uterus as it ascends in the abdomen commonly displaces the cecum and the appendix from below up, from right to left and from behind forward. In enlarging, the uterus may stretch existing inflammatory adhesions; it may displace, twist, and kink the appendix and thereby whip into activity latent appendicular infections. Pregnancy is a serious complication of appendicitis. 1. When the appendix is adherent to the uterus. 2. When it is the seat of an inflammation, perforative, gangrenous or suppurative in type. 3. When its inflammation leads to abscess formation, near or distal. 4. When the uterus forms part of the wall of an appendicular, peri- or para-appendicular abscess. In the aforementioned conditions, adhesions may be torn, abscesses may be ruptured by the enlarging uterus.

Influence of Appendicitis Upon Pregnancy.

Appendicitis is a menace to the mother's life, it is a menace to the gestation. The danger increases with the advance of gestation and is most marked after the fourth month. Infection can and does spread from the appendix to the genital organs by way, 1. Of the peritoneum (localized or diffuse peritonitis). 2. Of the appendiculo-ovarian ligament. 3. Of adhesions existing between the uterus and a perityphlitic pus focus. 4. Of the Fallopian tube.

Even a mild case of appendicitis may lead to a plastic peritonitis closing permanently the lumina of both tubes. From inflammatory adhesions may result dys-

menorrhoea, subinvolution, sterility through inflammatory closure of tubal ostia, habitual abortion, extra-uterine pregnancy, a tendency to uncontrollable vomiting, etc.

Appendicitis in the pregnant state may or may not terminate pregnancy. The prognosis is good as to non-interruption of pregnancy. 1. When the appendix does not hang in the small pelvis. 2. When the inflammation is limited to the appendiceal mucosa. 3. When it does not extend beyond the appendiceal wall. 4. When the appendiceal abscess or peri-appendiceal abscess is small.

Premature termination of gestation either by fetal death, fetal expulsion or both may be caused by, 1. Sequels of previous appendicitis, acute or chronic; inflammatory adhesions, old or recent, preventing uterine expansion. 2. Infection from the appendix extending through the tubes to the uterus and its contents. 3. Infection reaching the placenta through lymphatic and vascular channels. 4. Metastatic inflammation of the placenta disturbing its circulation. 5. Local irritation. 6. Fatal effect of hyperpyrexia upon ovum.

The further pregnancy is advanced the greater the danger of abortion after operation. The chance of abortion after early operation is very small indeed for the operation is then done before an extensive inflammation has involved the uterus or an abscess rendered the patient septic. Tendency to abortion is small in clean cases as in this type the operative manipulation is reduced to a minimum.

In 173 cases of appendicitis herein studied it is stated that abortion was artificially induced nine times and occurred spontaneously forty-nine times. Caesarian section was performed four times. Abdominal one, vaginal, three.

In eighty-three cases, pregnancy was not interrupted by the operation. In seventeen cases, no definite statement is made.

Diagnosis.

Appendicitis is not as frequently misdiagnosed as formerly. Increased familiarity with the condition enables us to make an earlier and a more timely diagnosis. It is an established fact that the morbidity and mortality of this disease can be lessened if it be diagnosed and operated, before the advent of complications, perforation, gangrene, abscess formation, peritoneal involvement, etc. The diagnostic difficulties increase with the advance of gestation and persist during the puerperium.

The symptomatology of appendicitis in the pregnant is the symptomatology of the disease in the non-pregnant. Nevertheless, the recognition of the condition is made more difficult by various factors. One or more of the cardinal symptoms may be lacking. The symptoms and signs may not be sufficiently pronounced to lead to careful investigation or may be classed among the various disturbances incident to pregnancy.

During pregnancy the abdominal walls are on the stretch; they lack the softness and pliability so essential to careful and satisfactory abdominal palpation. In very fleshy patients, palpation does not give definite findings.

The seat of pain though always corresponding to the site of the inflamed appendix, may be abnormally high. The leukocyte count gives uncertain findings; at best, it has only relative or corroborative value.

Mistakes are less likely to occur by keeping in mind (a) that every pregnant woman is to be examined for physical defects. (b) That the history is all important; ask about previous attacks. (c) In gravid women,

all attacks of indigestion associated with vomiting and fever should arouse suspicion and command a careful examination of the abdomen. (d) Right iliac pain unassociated with uterine contractions should lead one to think of appendicitis. (e) Deep seated retro-coecal and other abscesses may be detected by rectal examination. (f) Peri- or para-typhlitic abscesses may be detected by vaginal examination.

In a pregnant woman, acute abdominal pain of a sudden onset, at first diffuse and then remaining localized to the right iliac fossa, suggests appendicitis; more so if the patient gives the history of previous attacks.

Differential Diagnosis.

During gestation, many conditions simulate appendicitis. As most of these conditions demand operative relief, the resulting diagnostic mistakes are embarrassing and humiliating to the surgeon, but not commonly disastrous to the patient. In adnexal disease the pain and the objective findings are most always bilateral, while in appendicitis, they are unilateral and the pain as a rule is more acute. Non-ruptured right tubal pregnancy simulates and is frequently diagnosed chronic appendicitis. Rigidity and tenderness over McBurney's point are seldom marked in extra-uterine pregnancy. Intelligent interpretation of the clinical history and of the objective findings, furnished by a careful and thorough abdominal, rectal and vaginal examination helps one to arrive at a correct diagnosis. Abscesses in the pouch of Douglas due to perforative appendicitis have been wrongly attributed to primary uterine and tubal infection; right-sided parametritis due to the spreading of a retro-colic appendicitis has been diagnosed ordinary puerperal infection.

In pyelitis, ureteritis, ureteric calculus of the right side one is guided by the urinary symptoms and findings. Hepatic colic has a sudden onset with pain in the right upper abdominal quadrant; this pain radiates toward the right shoulder and is usually apyretic. The pain of nephritic colic descends and radiates toward the external genitalia. In fecal impaction, the symptoms are less severe and yield to colonic injections and to laxatives.

In advanced pregnancy, the differential diagnosis between appendicitis and cholecystitis may prove difficult owing to the associated upward displacement of the cecum and appendix by the pregnant uterus.

Prognosis.

Pregnancy increases the severity and the fatality of appendicitis. Death may be due to intestinal obstruction, to perforation of the appendix, to heart failure, to peritonitis, or to sepsis. Recovery takes place through the gradual subsidence of symptoms; through the spontaneous rupture of an appendicular abscess externally, or into the gut, vagina, urinary bladder, uterus or other hollow viscus.

The type and the acuity of the inflammation influence the prognosis. The prognosis is good if the changes in the appendix are slight, if the inflammation is limited to the appendiceal wall; if there be slight or no peritoneal involvement, if complications be absent. It is grave in gangrenous, perforative and suppurative, appendicitis and in all cases complicated by abscess formation, near or distal, or by diffuse peritonitis. The results for the mother and fetus are better, the less advanced the gestation, the less virulent and wide spread the inflammation, the earlier the operation. Maternal mortality of appendicitis in pregnancy increases from the fourth month on.

As far as the child is concerned, prognosis is absolutely good in cases of early operated appendicitis. Severe maternal appendicitis is exceptionally grave for the fetus, who succumbs either through infection or through interruption of pregnancy. In our cases, there were fifty-eight abortions; of these nine were induced and forty-nine were spontaneous. The spontaneous abortions gave seventeen maternal deaths and thirty-two recoveries. The induced abortion gave four maternal deaths and five recoveries.

Prophylaxis.

The cause of appendicitis is not known. Therefore, in the present state of our knowledge a discussion of the prophylaxis of appendicitis, of necessity, must be and is incomplete, inadequate and inconclusive. The importance of constipation as an etiological factor in appendicitis is as yet undetermined. We do not know how to prevent appendicitis, but we do know how to lessen its morbidity and mortality. Some surgeons remove the appendix during the course of all laparotomies. The removal of a healthy organ because one is not certain that it will always remain free of disease is unnecessary, meddlesome, and contrary to the teachings of conservative surgery.

In all laparotomies for conditions other than appendicitis, if the patient's condition permits, the appendix should be examined and removed, 1. If it be abnormal in length, size or location. 2. If it be in close relation to a pedicle or denuded surface, left by operation. 3. If its cavity be partly or wholly obliterated. 4. If it be the seat of anatomic alterations, club-shaped, thickened, kinked, twisted, strictured, etc. 5. If it contain foreign bodies, fecal concretions, worms, etc. 6. If it be adherent, in part or in its entirety, to some normal or diseased contiguous organ or to the abdominal parietes. 7. If it be the sole content or one of the contents of a hernial sac. 8. If it be the seat of cystic, neoplastic or inflammatory disease.

Operations that contribute to the safety of a pregnant woman should be performed without hesitation.

Indications for Operation.

Clinical cures obtained by medicinal measures are rarely anatomical cures. Starvation treatment is debilitating to the mother, is unfavorable to fetal growth. Perforation, abscess, general peritonitis, subdiaphragmatic abscess, thrombosis and embolism are possible results of expectant treatment. Better to remove too many appendices than too few. Be not deterred by the possibility of a difficult operation for the results of early operation are satisfactory and the mortality low.

Operate early in the attack and early in the course of pregnancy. As a general proposition, operation does not interrupt pregnancy. The triumphs of ovariectomy and hysterectomy in pregnancy are well known; in appendicitis operation is even more urgent. Accumulated instances are on record in which pregnant uteri have been operated upon, cauterized, etc., in which ovarian and other pelvic tumors have been removed without pregnancy being terminated. The high mortality of appendicitis in pregnant women is due to fatal temporization. Placental, uterine and peritoneal infections are such serious complications that one should, if possible, operate before the inflammatory process has extended beyond the appendical wall, before abscess formation has taken place, before the onset of peritoneal or other complications.

Operate early in gestation. At that period the uterus is not large enough to be in the way. The operation is

less difficult; the tendency to the interruption of pregnancy is minimal and the percentage of maternal recoveries is higher. The danger of recurrence in the latter months of gestation calls for operation during the attack; if that be not feasible an interval operation should be performed as long before the labor as possible.

Operation in fifty cases of non-perforative appendicitis gave only one maternal death and seven abortions. In fifty-five cases of diffuse peritonitis secondary to appendicitis, there were forty-four maternal deaths, only one child was saved, all the others were born prematurely or died soon after birth from weakness, or the illness of the mother resulted fatally before the termination of labor.

Treatment.

Interruption of pregnancy is not indicated; it increases the danger. Rest should be enjoined; during the operation, the uterus should be handled and exposed as little as possible; after the operation, opiates should be administered. In a clean case, the operative manipulation is slight. Artificial evacuation of the uterus before laparotomy is indicated only when the child is dead or when there are appreciable signs of labor. If the uterus be artificially emptied before the seventh month, the child will be definitely lost and the patient not improved. By evacuating an appendiceal abscess before emptying the uterus one avoids flooding the free peritoneal cavity with pus. Operations for appendicitis are performed under local or general anaesthesia. Some operators resort to lumbar anesthesia. Operate as rapidly as is consistent with thoroughness and the patient's welfare.

The operation of election is appendectomy, the technique of which is little influenced by the presence of pregnancy. The same surgical principles are applicable in the pregnant as in the non-pregnant.

When in doubt as to whether the case is one of appendicitis, salpingitis, tubal pregnancy or other pathological conditions, use a supra-pubic median incision. This incision affords easy access to most of the pelvic contents and though it is not the incision of election for exposure of the appendix, it is a very serviceable incision. In cases of combined appendicitis and salpingitis, combined appendicitis and tubal pregnancy, combined uterine myoma and appendicitis, etc., the median infraumbilical incision should be employed.

In 125 of our cases the appendix was removed. In forty-three cases, it is not stated whether it was removed or not. In five cases, it was sought but not found, and therefore, not removed. Each of these cases presented an abscess, which was evacuated and drained. If the appendix be imbedded in a mass of firm inflammatory adhesions, it can be removed by shelling it out of its peritoneal coat.

An appendiceal abscess should be opened at its point of maximal bulging; preferably through a cutaneous surface. If the appendix be not easily found, be content with incising the abscess, evacuating its contents and resorting to tube or gauze drainage. A subsequent operation will rarely be required to remove the appendix. Appendiceal abscesses have been opened and drained through the vagina. Appendiceal abscesses have also been opened through the rectum. These are exceptional procedures: methods of necessity, not of election.

The post operative treatment is that which is employed in the non-gravid modified only by a longer sojourn in bed, thereby giving time for firm consolidation of the operative wound.

Post Operative Complications and Sequelae.

In cases of such widely different nature as those herein studied, operated in different surroundings and by different operators, one is not surprised to find noted the occurrence of post operative complications and post operative sequelae. The danger of hernia development after timely operations for appendicitis is practically nil. The protection of the operative scar by the aid of adhesive plaster has been recommended. See that labor be not unduly prolonged.

Among the sequelae reported in these cases were four ventral hernias, three cases of diffuse peritonitis, thrombosis of femoral veins, phlebitis, subphrenic abscess, intestinal fistulae, etc.

Summary.

1. Appendicitis occurs at all ages and in both sexes. It presents to all medical men important diagnostic, prognostic and therapeutic features.
2. Appendicitis acute, or chronic, initial, relapsing or recurrent, primary or secondary, complicates pregnancy with greater frequency than is believed. It is the most important complication of pregnancy.
3. It occurs in single and twin gestations; in first, early and late pregnancies; in primiparae, deultiparae, and multiparae.
4. It occurs at all periods of the child-bearing age and at all periods of gestation. It complicates both intra- and extra-uterine pregnancies and can coexist with other disease processes to which it may be primary, secondary or coincidental.
5. Gestation exerts no untoward influence upon the normal appendix. It can and frequently does aggravate existing, or determine new inflammatory disturbances in appendices deviating from the normal in form, length, mobility, location, etc., in appendices bound down by adhesions or the seat of inflammatory or other degenerative changes. Pregnancy does not relieve the dangers of appendicitis, but aggravates them.
6. Appendicitis and uni or bilateral tubal pregnancy are frequently mistaken for each other. They may occur simultaneously or consecutively, may be either primary or secondary to, or independent of each other.
7. In appendicitis, in ectopic pregnancy and in combined appendicitis and ectopic pregnancy, of obscure symptomatology, it matters not whether you are certain or in doubt as to the real diagnosis, early and timely operative treatment is imperatively indicated.
8. During gestation, every type of appendicitis may occur: adhesive, catarrhal, gangrenous, ulcerative, obliterative, perforative and suppurative.
9. Appendicitis with adhesion formation is of great significance because adhesions of inflammatory origin can, (a) incarcerate the pregnant uterus in the pelvis and mechanically hinder the enlargement of the uterus, (b) impair the contractibility of the uterus, (c) interfere with uterine labor contractions, (d) entail subinvolution, (e) induce sterility, (f) disturb tubal and ovarian integrity of function and of structure, (g) determine ileus, (h) produce abortion, and, (i) lead to extra-uterine pregnancy.
10. Chief among the coexisting pathological conditions noted in appendicitis are simultaneous or consecutive inflammation of the uterus, tubes or other pelvic organs. The close anatomical relations existing between the appendix and the pelvic organs explain their frequent association in disease processes.
11. Appendicitis has a greater morbidity and a higher mortality in the pregnant than in the non-pregnant, operated or non-operated. It may terminate pregnancy.
12. The symptomatology of appendicitis in the preg-

nant is the same as in the non-pregnant. The clinical picture, however, is blurred by the coexisting symptoms of pregnancy. Diagnostic mistakes may be lessened by keeping in mind that appendicitis occurs in pregnant women; that a history of previous attacks during the same or previous pregnancies can frequently be elicited by thorough and deliberate physical examination. With care, one can in these cases almost always arrive at a correct diagnosis.

13. To establish with certainty the diagnosis of appendicitis during pregnancy, it is necessary to exclude the presence of myalgia due to stretching of abdominal muscles, typhoid fever, ruptured or non-ruptured tubal pregnancy, cholecystitis, salpingitis, ovaritis, adnexitis, ovarian cyst with or without a twisted pedicle, right-sided pyelitis and ureteritis, fecal impaction, hepatic and nephritic colic. At times, any of the fore-mentioned conditions so closely resemble appendicitis as to cause diagnostic errors and operative mistakes.

14. The morbidity and mortality of appendicitis complicating pregnancy and the puerperium are the morbidity and mortality of delay in applying efficient surgical treatment. The initial symptoms of the attack do not enable the clinician to foretell accurately how a given case will terminate. What is going to happen in ten, twenty or forty hours following the onset of appendicitis cannot be foreseen. When the condition is diagnosed and remedied early, the mortality is practically nil. Abscess formation may be forestalled by early diagnosis and early operation. The high mortality is due to late diagnosis and late operation. The pregnant woman whose metabolism is good is a good subject for operative measures.

15. Prognosis is better for the mother if there be no interruption of pregnancy spontaneous and otherwise. The bad attacks cause abortions and abortion aggravates the illness. In the great majority of surgically treated cases there is no interruption of pregnancy and when it does occur it is not due directly to the operation. The interruption of pregnancy is not indicated. It aggravates the prognosis. The fetal prognosis is good in early operated cases.

16. The following prophylactic measures are sound and safe and are recommended for general adoption: (a) During the child-bearing age, recurrent attacks of pelvic pain, dysmenorrhea, menstrual and other pelvic disturbances unassociated with objective pelvic findings are not infrequently due to unrecognized appendicitis or sequelae thereof. In the presence of this etiological factor, the ablation of the appendix is indicated. (b) In laparotomies for conditions other than appendicitis, the appendix should be examined. Should it present any deviation from the normal. Should it be pre-indicated. (c) During the child-bearing age, any woman who has had one or more attacks of appendicitis treated non-operatively should have her appendix removed so as to correct existing pathological conditions and prevent future attacks of appendicitis and complications incident thereto. True prophylaxis in a woman of child-bearing age who has had one or more well marked attacks of appendicitis is an interval operation. It goes without saying that constipation is to be avoided and that other hygienic precautions are to be observed.

17. A definite and accurate diagnosis of acute, chronic or recurrent appendicitis, irrespective of the stage of pregnancy, invariably calls for operation. The disease during pregnancy runs such a rapid destructive course that delay is hazardous. Operation should be early and immediate. A case may be rendered hope-

less by hesitation and inaction. Temporizing methods are extremely dangerous.

18. Treat appendicitis in the pregnant female as you treat it in the non-pregnant. Every pregnant woman who is a subject of appendicitis should be operated on just as soon as the diagnosis is made, whether the attack is the first, second or third.

The unusual risks of leaving a diseased appendix in the abdominal cavity are much increased by the pregnant state and the evil consequences of another attack, i. e., gangrene or perforation will be correspondingly greater. The danger of recurrence in the later months of pregnancy and in the child-bed period calls for operation preferably during the attack. If the patient is not seen in time, one will do the next best thing, an interval operation during the pregnancy. Pregnancy is an additional indication for operation in cases of appendicitis.

19. In inflammatory disease of the appendix, the ideal operation is an appendectomy. In some cases, however, one has to be content with incision, evacuation and drainage of an appendiceal abscess. Exceptionally drainage of abscesses in Douglas' pouch may be effected through the vagina or rectum. Pus should be evacuated irrespective of uterine contents, and irrespective of its location.

20. It is well to keep in mind that for an appendectomy the median incision is contradicted in the later months of pregnancy, that it is best to avoid or to reduce to a minimum the manipulations of the uterus; opiates are indicated in the after treatment. Labor when it occurs shortly after a laparotomy is not to be unduly prolonged; it may have to be assisted.

Sanitary Corps for U. S. Army.

Secretary Baker has approved an order creating a sanitary corps under the Medical Department of the Army which will include various classes of experts in sanitation, bacteriology, sanitary engineering, and men skilled in supplies, transportation, storage, etc., in connection with medical department work. Creation of this corps will make possible taking over intact hospital and ambulance units already organized in France which, under the law, can not be incorporated in the medical corps, to which the law authorizes the appointment only of graduates in medicine. This will allow the medical corps to make use of other trained men not graduates in medicine.

The order creating the corps is as follows: "The President directs that under the authority of the first proviso of section 2 of the act to authorize the President to increase temporarily the Military Establishment of the United States," approved May 18, 1917, there be organized under the Medical Department for the period of the existing emergency a sanitary corps consisting of commissioned officers proportionately distributed among the several grades as in the Medical Corps now established by law, and such enlisted men as the Secretary of War may determine to be necessary. The total number of officers in said corps may be approximately equal to, but not exceed, 1 for every 1000 of the total strength of the military forces authorized from time to time pursuant to law. The officers of said corps will be provided by assigning officers of the Medical Reserve Corps thereto, or by the appointment of citizens of the United States who are found under regulations established by the Secretary of War to possess special skill in sanitation, in sanitary engineering, in bacteriology or other sciences related to sanitation and preventive medicine, or who possess other knowledge of special advantage to the Medical Department. There shall be no grade in the sanitary corps above that of major and no officer of the Medical Corps shall be appointed in the sanitary corps. The number in the several authorized grades of the sanitary corps shall be proportional to the number authorized by law for the corresponding grades of the Medical Corps."

Percussion over an aneurysmal tumor is naturally dull. The dullness is, however, very local—punctate. This would be expected; the tumor is rounded and more or less covered by lung, hence the area of dullness is circumscribed and rapidly shades off.

TESTS OF KIDNEY FUNCTION.

CLINICAL PROFESSOR OF GENITO-URINARY DISEASES IN THE LONG ISLAND COLLEGE HOSPITAL; GENITO-URINARY SURGEON TO LONG ISLAND COLLEGE AND KINGS COUNTY HOSPITALS AND THE POLHEMUS MEMORIAL CLINIC, ETC.

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A knowledge of the secreting capacity of the kidneys today is an essential preliminary before any operation is undertaken on the genito-urinary tract.

Most of the post-operative deaths in urological surgery occur as a result of suppression of urine. In cases of long-standing obstruction to the outflow of urine, occasioned by stricture, stone or hypertrophied prostate with retention of urine, the back pressure on the ureters and kidneys sets up a nephritis and pyelitis, or at least a condition where the balance of circulation in the kidneys is easily disturbed. Any operation is liable to throw the damaged kidneys into a state of acute congestion and the patient dies in from four to seven days from suppression of urine. The functional kidney tests enable us to avoid these untoward deaths after operation and institute the correct preliminary treatment. For this reason before operation it is essential that we know the working capacity of the kidneys and if they are not sufficiently active to support life it is imperative that treatment be instituted to improve their function, and in the event of not being able to succeed in bringing about an improvement of function to refuse surgical interference which will only serve to shorten the few weeks on earth remaining to the unfortunate sufferer.

The above remarks apply particularly to the measure of the function of both kidneys together, but the tests are equally important in unilateral surgical diseases of the kidneys.

In modern kidney surgery the operative mortality ranges about 9 per cent., whereas twenty years ago the mortality after kidney operations was from 36 to 52 per cent. What has brought about the change in the operative mortality? This great reduction in the death rate is due to our ability to catheterize the ureters and to know positively whether the disease is located in the right or left kidney, and at the same time to ascertain the condition of the other kidney. It is not enough to know which kidney is diseased. We must also know the condition of the other kidney. If we locate the disease in the right kidney we must know that the left kidney is healthy and capable of supporting life, and if it is we can operate safely. The functional kidney tests are applied in these cases.

With these few remarks we will now proceed to review the various methods of testing the secreting power of the kidneys.

Let us take up first the methods of measuring the function of both kidneys at once, as in the case of hypertrophied prostate or stone in the bladder.

I. Phenolsulphononephthalein.

Modern urology is under a great debt to Geraghty and Rountree for discovering and applying this simple and accurate test of the functional activity of the kidneys. This test is based upon the fact that phenolsulphononephthalein (prepared by Hynson, Westcott & Co., Baltimore), is eliminated rapidly by the kidneys without injury to them and gives a bright red color to the urine when an alkali is added. The percentage of drug elimination is readily estimated by comparison with a standard solution of known strength by means of the Duboscq or other colorimeter.

The test is made by emptying the patient's bladder completely and 1 c.c. of the standard solution of the drug injected into the muscles of the back.

At the end of one hour the entire contents of the bladder should be carefully collected, and the amount of the drug secreted accurately estimated by a colorimeter. Again, at the end of the second hour, another such collection and similar examination should be made.

As to the value of the phenolsulphonephthalein test the author quotes at length from Dr. Geraghty's article:

"The phthalein test has given valuable information in all these cases and has enabled us to differentiate those cases with severe renal damage from those in which the renal involvement is slight. As a rule the test has demonstrated the greatest impairment of function in those cases which have large residual urine and have not been leading a catheter life. Clinically, this type of case is recognized as the most dangerous when operation is undertaken without preliminary treatment. In many instances in which the output of the drug was low when the patient was first seen, the adequate régime described above has resulted in a decided improvement of the kidney function as indicated by the test.

"When the time of appearance is delayed beyond twenty-five minutes and the output of the drug is below 20 per cent. for the first hour, operation is postponed regardless of the patient's clinical condition. If under routine treatment the output remains low but constant, the renal function is probably in a stable condition, and the operation may be undertaken, care being taken to select an anesthetic which will not further depress the renal function. In one instance a successful operation was performed with an output of 8 per cent. for the first hour, but this output had remained constant for a period of five weeks. The low output here was ascribed to chronic interstitial changes in the kidney, and nitrous oxide was accordingly employed.

"When the residual urine is large and the patient has not been leading a catheter life, even if the output at a single determination is large, operation is deferred in order to determine whether the functional activity is stable, for it has long been recognized that following the relief of retention the function of the kidney is extremely variable. Repeated determinations should be made, and, except when unavoidable, operations should not be performed when the tests indicate a decreasing function. There have been two such cases in our series, in both of which operation was followed by death from acute suppression. Again when only a trace of dye is excreted, operation should not be attempted, as grave renal changes exist. Two cases excreting only a trace died of uremia within a short period. In neither case was any operation performed, though clinically at the time of the first test no evidence of uremia was detected."

The introduction of the phthalein test has been a great factor in lowering the mortality rate in prostatectomy, and no operation should be undertaken in protatic cases without first having acquainted ourselves with the functional condition of the kidneys, by this or some other means.

The phthalein test also is often applied to the differential tests between the right and left kidneys, but for this purpose the author prefers indigo carmin.

II. Phloridzin.

The phloridzin test is based on the fact that phloridzin causes an activity of the kidney-cells which enables them to withdraw sugar from the blood, and on examining the urine we find glucose.

When the secreting power is at its highest a large amount of sugar will be produced, and when the secreting power is impaired less sugar will be eliminated.

A solution of phloridzin, Merck, 1-400, is injected in 30 minim doses hypodermatically into the gluteal region. The elimination of sugar begins from fifteen to thirty minutes later. The patient is then catheterized and the urine is examined. Healthy kidneys will generally produce about 1 per cent. of sugar and over, while in defective kidneys the quantity of sugar eliminated amounts to a small fraction of 1 per cent., and in the

greatest disturbances of renal function no elimination of sugar can be accomplished.

A delay in the time of excretion also points to disease of the kidneys. Dr. Robert H. Greene has experimented extensively with this test and calls attention to the fact that a delay of thirty minutes in showing sugar in the urine is strongly indicative of diseased kidneys and a positive indication of some disturbance of the tissue metamorphosis acting as a strong plea for further investigation of the case.

The above-described tests are accurate and reliable and give sufficient data for clinical work so that the complicated and not very accurate tests of artificial polyuria, methylene blue and cryoscopy have been entirely superseded.

III. Total Nitrogen and Urea in the Blood.

This is a recent functional test and is at present being extensively tried out. It is based upon the fact that in all tests of renal function a marked increase in the blood nitrogen will be found, but as uraemia is not dependent upon the retention of nitrogen, a knowledge of the quantity of nitrogen in the blood, by itself, is of little or no prognostic value. Of greater help is the relation between the nitrogen of the blood and the nitrogen excreted by the kidneys, as expressed by Ambord's co-efficient or the McLean index.

The difficulty of applying these tests, particularly to clinical cases, is that they need an expert chemist to carry them out and after the results are obtained they are not as dependable as the simple clinical tests already described.

Comparison of the Function of the Right and Left Kidneys.

Up to this point we have considered the question of the functional activity of both kidneys taken together, from the secretion of each mixed in the bladder, but in cases of unilateral disease of the kidneys it is necessary to know which kidney is affected, the extent and character of the lesion, and also whether the other kidney is sound and capable of supporting life. For this information the urines must be drawn by ureter catheter from the right and left sides and functional kidney tests applied. Indigo carmin is the drug par excellence for this purpose, and the general term *chromocystoscopy* is applied to the method of using it.

The use of indigo carmin, which, after hypodermatic injection, is eliminated by normal kidneys in from eight to ten minutes, giving the urine a dark blue color, was first used by Voelcker and Joseph and is now very generally used in determining diminished elimination from either kidney.

A tablet of indigo carmin (Brückne, Lampe & Co., Berlin, or Burroughs, Wellcome & Co., London) is dissolved in 10 c.c. of water and injected hypodermatically into the buttock, the patient having abstained from water for four hours previously.

In from five to eight minutes a blue stream of urine is seen issuing from the ureter of the normal kidney, and delay in excretion on the opposite side denotes disease with diminished functional activity.

Catheterization of the ureters is not necessary: all that is needed is to keep the mouth of the ureter in view with the cystoscope and watch for the blue stream to make its appearance in the field of vision, but the authors prefer to catheterize the ureters and collect the urines in separate bottles.

From a personal experience of over five years with indigo carmin the author can state that it is always reliable, and a delay of some minutes on one side with

the blue appearing in normal time on the other side, always indicates disease on the side of retardation. Any form of disease in the kidney, such as nephritis, pyelitis, tuberculosis or calculus, will retard the appearance of the indigo carmin on the affected side and the extent of involvement of the kidney parenchyma can be estimated by the length of time of retardation. Indigo carmin has an advantage over phthalein, which can be used as a color test in the same way, in that indigo carmin is a time test and not quantitative, consequently the catheter need only be left in place until the blue appears, while for a correct phthalein reading it is necessary to collect the urine for two hours.

In cases where it is impossible to introduce a catheter into the ureter, by watching the ureteral mouth for the blue jet we can determine whether the excretion of indigo carmin is on time or is retarded.

Indigo carmin also has the advantage of being non-toxic, and it is possible to collect the blue urines in bottles and subject them to a microscopic and chemical examination and use the remainder to inoculate guinea pigs without influencing any bacteria which may be present in the urine.

As a further control against the indigo carmin test the relative quantity of urea secreted by each kidney simultaneously is also a valuable index of the health or disease of the kidneys.

Comparison of Urea Secreted by Each Kidney.

It has been proven by experiment that healthy kidneys secrete exactly the same amount of urea during and at the same time, and if one kidney is diseased the excretion of that organ is diminished.

A full quantity of urea would thus show a normal kidneys, while a marked diminution of urea from the other kidney would show disease of that organ.

The urea test commends itself because it is accurate and can be easily carried out with a simple testing apparatus.

In former times, before the introduction of indigo carmin and phthalein, in our work in the Long Island College Hospital we depended largely on the relation between the amount of urea on the right and left sides and found it to be generally a very useful clinical guide, and we still make use of it in conjunction with indigo carmin.

32 Schermerhorn St.

Rupture of the Gall-Bladder.

W. W. Grant, reports two cases of non-traumatic rupture of the gall-bladder; one, an empyema ten years after a primary operation for gall-stones. At the second operation a single smooth stone was removed from the dilated cystic duct. There was no obstruction and no jaundice. The patient's general health was good until six months before the rupture. Dyspeptic symptoms and recent tenderness over the gall-bladder were the only indications of trouble. Had cholecystectomy instead of drainage been done at the primary operation, more trouble and danger would have been experienced in the subsequent history and operation.

The second case was that of a woman of seventy-two years, with well-defined and conclusive history of gall-stone. The diagnosis was perforation and general septic peritonitis from rupture. Operation was refused. Postmortem showed a contracted gall-bladder around a single large stone with a small gangrenous area through which the rupture had occurred and a pint of bile had escaped into the right kidney fossa. The specimen of gall-bladder with liver tissue shows the gall-bladder stone, and the reverse side shows a lighter colored stone in the liver substance—probably a branch of the hepatic duct. A timely operation would have saved her life, but would not have revealed the second stone—no matter whether the operation was a cholecystostomy or a cholecystectomy. The latter operation is indicated only in small and gangrenous bladders.—(*Surg., Gynec. & Obst.*, 1916, xxiii, 422.)

LUKE, THE BELOVED PHYSICIAN.

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"I have fought a good fight, I have finished my course, I have kept the faith. Only Luke is with me."

—Saint Paul's Second Epistle to Timothy.

There is a deeper significance in the words of Paul which we have just quoted than would appear to the average reader, who would be apt to ascribe Luke's presence during Paul's second Roman imprisonment pending his martyrdom merely to conventional loyalty and affection. Luke was displaying a trait that has always marked the faithful physician. He was Paul's physician, and the Apostle's infirmities were such that Luke's attendance was necessary. Paul's incarceration in a Roman dungeon, deserted by Demas, Crescens and Titus, made Luke feel the professional urge only the more keenly.

It seems to us that Luke's professional relation to Paul is obvious. Paul chose him as a companion in his journeys and labors for a special reason which we shall endeavor to make clear. Together they traveled through Macedonia and many other countries. First joining forces at Troas, they crossed to Europe, landed at Neapolis, and then proceeded to Philippi. When Paul left Philippi to preach at Athens, Corinth, Jerusalem and Ephesus, Luke remained in charge, partly to finance Paul's mission (Phil., iv. 15-16) and partly, it would seem, because of an improvement in Paul's health making constant attendance less necessary. When Paul returned to Macedonia they again joined forces at Philippi and proceeded to Jerusalem. Luke was with Paul during his imprisonment of two years at Caesarea under Felix, accompanied him on his voyage to Rome, and during the Apostle's first captivity at Rome attended him medically (Col. iv. 14) and actively promoted his administrative work. Luke was probably one of the bearers of Paul's Epistle to the Corinthians (St. Jerome).

Paul's health appears always to have been poor. He ascribed his symptoms to "a thorn in the flesh." Certain psychiatrists have been of the opinion that he was a sufferer from psychic epilepsy. Lombroso writes of him as follows: "His moral character was anomalous; naturally kind and courteous, he became ferocious when excited by passion. In the school of Gamaliel, a moderate Pharisee, he did not learn moderation; as the enthusiastic leader of the younger Pharisees, he was among the fiercest persecutors of the Christians. . . . Hearing that there was a certain number of disciples at Damascus, he demanded of the high priest a warrant for arresting them, and left Jerusalem in a disturbed frame of mind. On approaching the plain of Damascus at noon, he had a seizure, evidently of an epileptic nature, in which he fell to the ground unconscious. Soon after this, he experienced an hallucination, and saw Jesus, who said to him in Hebrew, "Paul, Paul, why persecutest thou me?" For three days, seized with fever, he neither ate nor drank, and saw the phantom of Ananias, whom, as head of the Christian community, he had come to arrest, making signs to him. The latter was summoned to his bed, and calm immediately returned to the spirit of Paul, who from that day forward became one of the most fervid Christians. Without desiring any more special instruction—as having received a direct revelation from Christ—he regarded himself as one of the Apostles, and acted as such to the enormous advantage of the Christians. The immense dangers occasioned by his haughty and arrogant spirit were compensated a thousand times over

by his boldness and originality, which would not allow the Christian idea to remain within the bounds of a small association of people 'poor in spirit,' who would have let it die out like Hellenism, but, so to speak, steered boldly out to sea with it. At Antioch he had an hallucination similar to that of Mahomet at a later period; he felt himself rapt into the third heaven, where he heard unspeakable words, which it is not lawful for a man to utter."

The psychic type of aura is suggested in Luke's account of Paul's call to the Apostleship: "And as he journeyed, he came near Damascus; and suddenly there shined round about him a light from heaven." (The Acts. ix. 3.)

In psychic epilepsy there is a non-convulsive equivalent of the conventional fit. This may vary from a dream state to unconsciousness of varying degree, with an intermediate state at times in which very active motor and psychic phenomena occur which are sometimes remembered afterward. Such states were frequent in the case of Mahomet, and at such times he was regarded by his followers as under special revelatory influence. This would seem to have been the case also with the associates of Paul, for "the men which journeyed with him stood speechless, hearing a voice, but seeing no man," and Ananias and Barnabas testified to the divine character of the phenomenon. Probably a definite fit would have made a different impression upon Paul's associates, particularly if followed by the usual somnolence, instead of the recital of remarkable visions.

After the seizure described Paul went into retirement in Arabia for three years. Possibly this inactivity, remarkable in such a dynamic character as Paul, was due to a period of frequent and perhaps convulsive seizures, disabling him for mission work. At any rate, he had another vision, presumably when his neurosis resumed its psychic form, which determined him to begin his mission to the Gentiles. But it was actually ten years after his conversion that the first distinctive mission was undertaken. It took two or three more visions to make him go from Troas into Macedonia.

On his first, and extraordinarily successful mission tour, Paul was seemingly able to sublimate most of his amazing energy into his preaching and organizing activities, and afterward to dominate the heads of the Church at Jerusalem in the matter of including other than the Jews in the scheme of salvation. The man's personal force and spiritual genius must have been tremendous, for he imposed upon the recalcitrant Church his theological principles and his practical methods, both of which had succeeded hugely with the Gentiles, however much they may have run counter to the Christianity of the Christ.

Grasset has called attention to an epileptic type, characterized by a tendency to excessive religiousness. This trait in Paul, added to his fits of mental depression (I Cor. ii. 3), his forebodings, as when he went up to Jerusalem after the third mission tour, his uncontrollable impulsiveness, as when he attempted to convert Felix and Agrippa, his contentiousness, as shown by the "disagreement" with Barnabas during the first mission, and the later substitution of Timothy for Silas, as well as his rebuke of Peter (Gal. ii. 14 *et seq.*); his unreasoning persecution of the Christians before his conversion and his active participation in the death of Stephen, all mark him as a neurotic genius in whom the occurrence of a falling sickness in conjunction with visions and hallucinations makes prac-

tically unescapable the conclusion that he was a psychic epileptic. The vision at Corinth supplements the foregoing evidence.

It is a great tribute to the warm-hearted Luke that he was able to live and work for years on terms of affectionate intimacy with this temperamental giant, this greatest of human dynamos. One can fancy the gentle Luke, like Androcles in the old story, persuading his lion-like charge to do his medical bidding—and not always succeeding. One can imagine the bursts of temper, and perhaps abuse, with which Luke may have had to put up. Luke must have required not only all his Christianity, but also all his developed poise as an experienced clinician, to overlook his great patient's trying traits. But Luke also knew exactly the man's tremendous place in the world of men and in the eyes of God.

Luke was a native of Antioch. He was not a Jew. His pure Greek style reveals him as a man of the highest culture. He probably also spoke Aramaic, the language of Jesus, which was much used in Antioch in his time. He was a physician by profession ("The most dear physician"—Col. iv. 14). It is thought that he may have studied at the medical school of Tarsus. The Greek schools of the day, like those of Alexandria and Pergamus, were doing good work for the times. That Luke's medical education was liberal is revealed in his choice of language in writing of medical things. This point has been well worked out by Walsh and the German Harnack. From his knowledge of the Mediterranean it has been conjectured that he may have been a ship doctor for a time. Before he became an evangelist he practised in Malta. He never married and is said to have been martyred at an advanced age (84), after suffering much besides for the faith.

Luke is thought to have been attracted to Christianity because of the emphasis laid by its founders upon the healing of the sick. St. Jerome speaks of his instinct to consider soul as well as body in his ministrations. So Luke was really a pioneer in a branch of medicine that has since attained great dignity. His eminent fitness to understand and deal with psychically trying subjects is shown by his ability to live and work amicably with Paul, who traveled far and wide founding churches innumerable but who could not have stayed long with any of the congregations without terrific clashes. Jesus as the great physician and healer appealed especially to Luke, as shown by the zest with which he gives the message of Christ to John the Baptist: "Go and relate to John what you (John's disciples) have heard and seen; the blind see, the lame walk, the deaf hear, the lepers are made clean, the dead rise again, to the poor the gospel is preached."

We also suspect that Luke was a pioneer in another branch of medicine which has since attained great importance. The last sentence in the message to John gives the clue to this—"To the poor the gospel is preached." That is to say, Luke was interested in anything which promised any kind of salvation to the exploited proletariat. He saw that Christianity promised economic regeneration of the masses and the overthrow of the autocratic incubi, if consistently applied. His story of the sinful rich man illustrates how this phase of Christ's teaching impressed him. Between the predatory rich man and the victim of social injustice "there is a great gulf fixed." And so we may say of Luke that he tried to do his part in an age not more benighted than our own toward making the world safe for democracy—or making democracy safe for the world.

Between the period of his practice in Malta and his association with Paul, Luke was in company for some years with Mark, Philip and James. His immunity to some of the punishment meted out at times to his associates appears to have been due to the fact that he was a Gentile, though apparently this did not save him from final martyrdom. He is supposed to have been baptized by Paul and to have been a member of the circle that included Mary, the mother of Jesus.

We come now to a very interesting phase of Luke's activities. Renan rates his literary attainments, as revealed in his writings, very high. He had a great command of Greek. He wrote the Gospel of St. Luke, the Acts, and probably part of the Epistle to the Hebrews. He is also thought to have assisted Peter in the writing of his first Epistle in Greek. Among all the chroniclers of early Christianity he is pre-eminently the literary artist and scholar. His word-paintings are wonderful pictures of the Annunciation, the Visitation and the Nativity. It is a fact that the great painters have relied mainly upon Luke for their scenes. And it is also to be noted that Luke himself was a painter, another evidence of the man's cultural leanings and equipment.

Luke, the accomplished physician and artist, and the only *Greek* among the evangelists, found in Christianity all that a man of his temperament, instinct for beauty, and powers craved for. He was not one of the Apostles but sustained his relationship to the infant Church by virtue of his medical presentation of the miracles, by his peculiar office as physician to Paul, and by his transcendent ability as a writer. When it is borne in mind that it is Luke's poetic description of the Nativity, in the second chapter of his Gospel, around which have revolved all the romance and beauty and appeal of the festival of Christmas, and that he is the author of the Magnificat, or Song of the Virgin, around which so much of the spiritual life of the Church has centered, his literary skill and power appear in an overwhelming light. Even in that beautiful song we have an utterance significant of Luke's economic and political attitude:

"He hath put down the mighty from their seats, and exalted them of low degree.

"He hath filled the hungry with good things; and the rich he hath sent empty away."

No medical man since Luke has more completely embodied all the qualities of the accomplished physician and citizen of the world, for he was medical sociologist, painter, clinician, historian, poet, dramatist, traveler, psychotherapist, man of affairs and administrator. And add to all this a genius for friendship! Imagine what the personal charm of such a man must have been.

As an artist, not as a propagandist, Luke made his appeal to men. Homan has pointed out that he nowhere claims for himself the possession of miraculous powers or intimates their exercise by him. "It is only as an on-looker, or as a chronicler, that note was taken of cures wrought in disregard of all physical laws as now known or understood in medical doctrine—a possible compromise between the science of the physician and the faith of the disciple."

No finer expression of the human soul has come ringing down the ages than the writings of him who composed such lines as those in the Benedictus and the Ave Maria, and those in which he would make men sing with the angels themselves.:

"Glory to God in the highest, and on earth peace, good will toward men."

GASTRIC DISTURBANCES.

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Singultus Gastricus Nervosus.

During the immediate attacks the inhalation of amyl nitrite is often of value, or the taking of cold substances, like ice cream, will occasionally stop the attack. During the interval tonics—arsenic, strychnin or cinchona—should be given. With these the bromides and asafetida are of importance. Change of locality or business occupation will often effect a cure.

Nervous Eructations.

The first step in the treatment of nervous eructations is the control of the patient. Suggestion is of the utmost importance, and by this alone one is often able to effect a cure.

A valuable measure is the use of bromide of sodium in large doses, or bromide of strontium in the beginning, for these seem to quiet the eructations temporarily, and under suggestion at the same time the patient submits quickly in most cases. If unable to get the desired effects in this way, one can invariably do so by cleaning up the intestinal toxemia with colonic flushings and mild laxatives, preferably the salines.

Diet plays no particular part except that a fruit, vegetable and cereal diet is preferable to one composed largely of meat and eggs.

Nervous Subacidity, Anacidity and Achylia Gastrica.

These conditions are found in cases where pathological changes are present in the stomach, and the treatment of them is coincident with treatment of the cause of the disturbance. They are common in cases of chronic catarrh and the underlying cause must be dealt with accordingly. The same is true of malignancy.

In all these cases the first step is to evacuate the intestinal canal with an ounce of castor oil. The next is to institute recurrent colonic flushings at a temperature of 110° to 115° F. every day for five or six days at least, then on alternate days for a while, on the other days using a hot water bag with the water in the bag at a temperature of 125° to 130° F., allowing it to flow in and out in order to keep the temperature well up, or applying an electric heat-pad.

Outdoor exercises that are interesting to the patient are valuable. The best of these is golf, but rowing, horseback riding and tennis, as well as an outdoor occupation, are all valuable.

In the medicinal treatment, hydrochloric acid is the first drug to suggest itself which should be given in large doses, never beginning with less than 2 c.c. (30 drops), and working up to 4 or even 5 and 6 c.c. (60, 75 or 90 drops) of the dilute acid, three times a day, after each meal. With the acid it is well to prescribe some of the bitter tonics. Should anemia be present, give the elixir of iron, quinin and strychnin, or a combination of Bland's mass and arsenious acid. For the constipation give either regulin or liquid petroleum, or both, and if necessary some of the cascara preparations which, in conjunction with colonic flushings mentioned above, yield good results.

The diet should be to a certain extent non-protein and consist principally of carbohydrates, starches, fruits and cereals. They must all be given well-cooked or finely ground, and vegetables, such as peas, beans, asparagus, lentils and the like, must be given in the form of a puree. Eggs are permissible, as is also some fish. For desserts, allow stewed fruits, custards, tapioca and junket with jellies and creams.

THE DIRECT OBSERVATION OF THE MIGRATION OF IONS.

Suggesting a Circulation of Body Fluids (Electrolytes) Independent of the Vascular System.

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New York.

Though galvanic cells have been used for over a century for the generation of electric currents, no apparatus had been devised for the detection and measurement of the current within the cells prior to the time the apparatus herein described was first used by the author. All measuring instruments in use consist wholly or partially of metal and therefore have to be introduced in an extra cellular metallic current. Such methods furnish but indirect information about the direction and intensity of the currents in the solutions within the cells.



Fig. No. 1

The instrument described below is intended to remedy these defects and enable one to study directly the migration of ions within the cell.

Fig. No. 1—Electrolytic Galvanometer for measurements without aid of telescope.

1. Jena beakers half-cells.
2. Solenoid.
3. Astatic needles.
4. Mirror.
5. Glass rod.
6. Adjustable screw.
7. Phosphor-bronze ribbon.
8. Steel indicator.
9. Graduate scale.
10. Rubber tubes for filling Solenoid.

(1) It permits the direct measurement of the currents passing through the interior of a cell, and renders it possible to demonstrate the analogy of electrolytic and metallic conduction by a simple and comprehensive experiment.

(2) It further enables us in the form drawn in figures III and IV to detect currents in a system consisting entirely of electrolytes. As the animal and human organisms, from an electrochemical standpoint, are but complicated systems of various electrolytes, this method permits us to reproduce and to detect in the laboratory the currents that are generated in the organism.

(3) A new system of measuring conductivities has been based upon the use of the instrument. It can easily be seen that if a fixed difference of potential exists between E1 and E2, for instance, by the use of a constant cell the current passing through the electrolyte in the glass coil is directly proportional to the conductivity of the liquid in the solenoid.

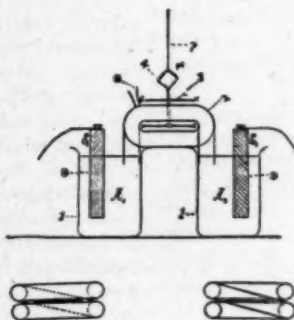


Fig. No. 1 (b).

(4) It may be mentioned that the electrolyte galvanometer can be used to an advantage for measuring alternate currents. For this purpose it is necessary to fill it with sodium phosphate solution, and to use one aluminum and one platinum electrode. Owing to the insulating layer of aluminum oxide, which is formed instantaneously if aluminum, acts as anode, the current (as Graetz and others have shown), can pass only in one direction, and the direct current thus formed deflects the needle. A rational scale may be easily graduated by comparison with an electric dynamometer.

The apparatus consists of two half-cells A1 and A2, which contain exchangeable electrodes E1 and E2 immersed in the electrolytes that are to be examined. A glass tube, having the shape of a solenoid with one or two coils and filled with a well conducting solution, furnishes the electrolytic connection between the cells; while the external current can be closed by means of a



Fig. No. 2

Fig. No. 2—Electrolytic Galvanometer for measurements with aid of telescope.

1. Telescope.

2. Scale.

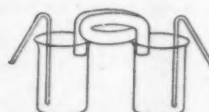


Fig. No. 3—For the measurement of currents passing between two electrolytes.



Fig. No. 4—For the measurement of currents in a system of electrolytes without electrodes.

switch connected by wire with both electrodes. With the aid of this arrangement it is possible to construct any galvanic cell. If, for instance, E1, is a carbon plate in nitric acid, E2, a zinc electrode in dilute sulphuric acid, the common Bunsen element is formed, the solenoid playing the roll of a porous cell. If E1 is lead, E2 lead covered with peroxide, and the liquid throughout the cell sulphuric acid, a storage cell is obtained, etc. As soon as the external circuit is established, discharge of the ions takes place at the electrodes, and there is a continuous migration of ions through the electrolyte in the solenoid. That the internal current thus formed is actually identical with the current in metallic circuit (but of opposite direction from the negative to the positive plate when used as a battery), is shown by the deflection given as astatic needle, which swings freely in the coils of the solenoid over a graduate scale. If a difference in potential of over 1 volt exists between E1 and E2 (as is the case in the most common cell combinations), and if the solenoid is filled with con-

centrated solutions, the deviation which amounts to nearly 90 degrees, is made visible by aid of a mirror attachment.

For our observation the instrument was put under a glass case and readings made with the telescope because the work involved the measurement of feeble currents such as are found when identical electrodes are used in solutions of slightly different concentration. The following dimensions were used in the construction of the electrolyte galvanometer: See Figures No. I and No. II.

Half-cells Jena beakers of about 20. c.c. each.

Solenoid—permanently attached to beaker thickness of walls 0.7 mm. Inner diameter of tube, 8 to 12 mm.; total length of tubing, 25 cm.; inner long axis of solenoid, 4 cm.; inner short axis 0.5 cm.; length of needles 2 to 3 cm., distance of the two needles, 15 mm., surface of electrode 10 sq. cm.

The whole is mounted on a stand of the kind used in electro-analysis. The electrodes are fixed in electrode holders and the astatic needle is suspended by a long phosphorbronze ribbon, to the glass rod, which for this purpose should be bent at the top. The external circuit should pass at a distance of at least 10 cm. from the solenoid, in order to avoid any disturbing influence upon the needle.

Using polished platinum plates as electrodes and 30 per cent sulphuric acid as an electrolyte, the instrument showed a total internal resistance of about 50 ohms. The resistance did not change more than 0.5 per cent when electrodes of somewhat different size were used, or when they were moved as much as 2 cm. from their original position, nor did filling the fluid in the cells to different levels cause an appreciable change in the resistance. The total resistance of the instrument is always very nearly equal to the calculated resistance of the solenoid.

These facts simplify the calculation of results, if the instrument is used for measuring purposes.

Sensitivity of the Instrument.

In order to obtain the maximum sensitivity of the instrument a small mirror attachment was used and the telescope which served for reading was put up at a distance of 300 cm. (Descriptive Diagram.)

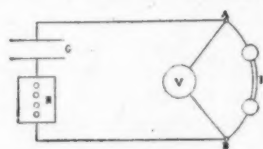


Fig. No. 5

The whole instrument was filled with normal sodium Chloride solution: Cell C served as a source for the current and platinized platinum foil as electrodes.

A normal voltmeter which furnishes easily the measurement of 0.001 volt was interposed in the outer circuit and a resistance box *R* with resistance coils up to 100,000 ohms was used to modify the difference of potential between *A* and *B*.

- 1.—Zero point before introducing current was 14.
 - 2.—Zero point after introducing current of .28 volts measured by voltmeter (Weston), was 11.
 - 3.—Zero point after reversing the current was 17.
- Sensitivity: scale division of instrument.
 1 galvanometer scale division equals about 0.1 volt.
 Deflection and Sensitivity of telescope scale division.
 140 telescope divisions equal 9 Galvanometer-divisions.

10 equal 0T, 19 equal 140T, 17 equal 90T, or 1 telescope scale division equal 9/140 galvanometer-division
 9/140 x 0.1 Volt equal 0.00642 Volt.

Determination of Conductivity.

The combination of a constant cell and the Electrolyte Galvanometer represents the simplest outfit for the determination of electric conductivities. In this case the amount of current passing through the cell and therefore the deflection of the needle are solely dependent upon the conductivity of the liquid. As long as the deflection does not exceed a few degrees and the temperature is kept constant we have very nearly fulfilled the equation. Deflection equals Constant multiplied by Conductivity.

For well conducting liquids a torsion screw is attached to the top of the phosphor-bronze ribbon and the needle is screwed back to its zero position. In both cases a scale showing directly the conductivities can be constructed with the aid of solutions of known conductivities. We use for this purpose maximum (sulphuric acid, the specific conductivity of which at 18° is = 0.7398) saturated Sodium Chloride, magnesium chloride solution prepared according to Kohlrausch and saturated gypsum solution. The conductivities of normal, decinormal, centinormal Potassium Chloride, as well as those of hydrochloric acid in different solution were determined and in all cases values were obtained which showed not more than 1 per cent. variation from those determined by the aid of the Wheatstone Bridge.

A disturbing factor in all these cases, is the polarization current which appears necessarily at the electrodes, even if they have been previously platinized in a platinum chloride solution. This was completely avoided by the use of zinc electrodes in zinc sulphate solutions connected with the electrolyte galvanometer by the aid of the U tubes filled with zinc sulphate.

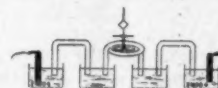


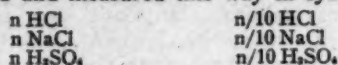
Fig. No. 6

Currents in a system of Electrolytes suggesting an intercellular or interstitial Circulation of the Body Fluids of Man, independent of the Vascular System.

If a concentrated solution of hydrochloric acid is in contact with a dilute solution the difference of osmotic pressure forces the hydrogen ions and the chlorine ions to pass from the concentrated solution into the dilute solution until an equilibrium is reached—that is to say until the concentration is the same throughout the liquid. In the case of hydrochloric acid the migration of the two ions cannot take place with equal speed—the hydrogen as the lighter ion moving about 6 times faster than the chlorine. The hydrogen ion carries with it a positive charge and in the moment of contact a current passes from the concentrated to the dilute solution. The detection of these currents necessitated always an indirect method, for instance, a system mercury, HgCl n HCl n/10 HCl HgCl mercury with a galvanometer or an electrometer in an external metallic circuit. The electrolyte galvanometer permits a direct determination of these currents. For this purpose the half cells are filled with normal and decinormal hydrochloric acid. A current establishes itself for an instant, but the difference in potential caused by the migration stops the current after a very short period.

If platinized electrodes are used the difference of potential causes a current in an outside metallic con-

nection and the concentration current between the solution will last for several minutes. Currents would be determined and measured this way in systems.



and others.

As would be expected the values found agree in each case closely with the values calculated and with those observed by voltmeter in an external circuit.

The quantitative results of these measurements as well as of those connected with the use of different solutions such as



will be reported in another paper.

Finally: A few words may be said about what seems to use the most important application of the instrument: that is about chemical systems of electrolytes without metal through which a current is made to pass.

If the two beakers of the electrolyte galvanometer are connected by a second wide glass bridge, we are able to construct a chain.

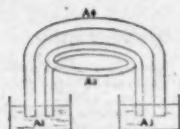
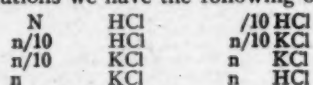


Fig. No. 7

If A1, A2, A3, and A4 are the different solutions in beakers, solenoid and bridge.

If A1 is n HCl, A2 n/10 HCl, A3 n/10 KCl and A4 n KCl solutions we have the following of potential:



As K and Cl ions show very nearly the same speed of migration, the difference of potential between n KCl and n/10 KCl solutions calculates itself as very small. The only considerable difference occurs at the contact n HCl, n/10 HCl and the general direction of the current is determined by this electromotive force. A number of experiments of similar character are under way; also others where we offer resistance to the migrating ions by placing a semi-permeable membrane at the ends of the solenoid in each cell. The object of these latter experiments is to get an idea if possible, of the conduct of body fluids (electrolytes) in the living organism.

These investigations were conducted by the author partly at the University of Chicago and at his private research laboratory.

33 East 60th Street.

Elimination of Aromatic Oxyacids in Nephritis.

The metabolic findings in forty-five patients, including twenty-one with nephritis, and in thirteen healthy persons are given in a four-page table, with special reference to the elimination of the aromatic oxyacids. In six of the nephritis cases the elimination was within normal range, but in most of the others the reduction below the normal figure was most striking. The reduction in the elimination of the oxyacids in severe nephritis does not depend on the amount of urine voided. There is evidently retention of these substances in the blood, giving warning of impending uremia.—(*Jour. A. M. A.*, July 7; 1917.)

Physicians over 55 or physically unfit for active service will look out for the civilian population. The others are needed in the Army and Navy.

Five Minute Clinical Talks

ABSCESS OF THE THYROID GLAND.

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Abscess of the thyroid gland is not a frequent disease when compared with disease of tonsils, salivary and lymphatic glands. At the outset of the disease it is difficult to diagnose, and may go a number of days before signs are sufficiently diagnostic to enable the observer to classify the disease. To date I have had only two cases of this disease. The first case began as an infection in the gland, and could not be traced to previous infection in contiguous parts. It was treated when the patient stopped at successive places across the continent, as laryngitis. The second case was metastatic, and from a double mastoiditis. In both cases hoarseness was the first symptom; temperature, swelling of the thyroid region, and difficulty in swallowing were the special symptoms of the disease.

Case I. C. H. L., age about 38, weight 200, about 5 ft., 7 well set up, with a naturally thick neck. He reported having been treated for laryngitis during the previous eight days, and I perfunctorily treated him for the same disease. The day after he returned with more distinct hoarseness and with temperature. I began to suspect that the laryngitis was a myth. Examination showed the cords to be perfectly clear, and a deep swelling about the base of the tongue. The temperature was 100 and the pulse 80. There was an undue prominence and tightness of the collar, suggestive of swelling in the neck, more pronounced on the right in the beginning, but gradually involving the whole gland. Temperature varied for four days, maximum 101½ to 99 minimum daily, when he began to complain of much pain in the neck, and perspired greatly. The tumor increased in hardness and no fluctuation was ever found. Hot mud poultices were applied, and on the fifth day temperature was 102.8, and pulse 116. Doctor Anton was now called in consultation, and he made a collar incision under 1 per cent. novocain and adrenalin, and evacuated a large quantity of pus. We packed the wound daily and the patient left the hospital September 2, 1915, having entered on August 12, 1915. Cultures showed Staphylococcus with a few obscure organisms. Voice became perfectly normal after a few days.

Case II.—Miss H., age 54, seen on January 1, 1916. About six days after having been discharged from the hospital following a double mastoidectomy, she complained of a slight hoarseness and temperature 102.8, pulse 104, respiration 24. The patient was very drowsy and did not complain of pain. On the third day the maximum temperature was 99, minimum temperature 98. On the fifth day the maximum temperature was 101.2, minimum 98, with the glandular swelling and hoarseness increasing. Nothing was observed in the larynx. Hot mud poultices were kept constantly to the neck. On the twelfth day patient's maximum temperature was 100.6, minimum 99.4. Some pain in the right side. Sleeping most of the time. Began to cough and expectorated a great deal of mucous on the fifteenth day, maximum temperature 100, minimum 98.6. There was no fluctuation in the tumor, which was hard to the touch. On the sixteenth, under ether anesthesia, a collar incision was made, and a large amount of thick yellow pus evacuated. The wound was packed with sterilized gauze. Complete recovery January 31, 1917. Infection Staphylococcus in variety. The symptoms before operating were swelling of the thyroid gland and rigidity of adjacent muscles, cough, distinct hoarseness, temperature, and but little pain. Voice soon regained its normal timbre.

The disease may be mistaken for a sarcoma, as in a case reported by Bonney, and afterwards found to be an abscess and opened. It may also be confused with glossitis, abscess at the base of the tongue, laryngitis, esophageal abscess, perichondritis of the larynx and neck muscles.

Robertson reports one case of abscess of the thyroid emptying into the trachea; others have seen them open externally into the mediastinum, or emptying between the neck muscles. There is no age at

which the disease cannot be found, and according to Miggend, women are more susceptible than men. Meara and Macgregor (*Archives of Pediatrics*) reported a baby three and one-half years old, with a suppurating thyroid. The child on account of cough was treated for pneumonia by another physician. In this case an intubation was necessary. After a few days the abscess was incised, and the child made a complete recovery. The cause of the disease according to the authors, may have been pneumonia, contiguous suppurative glands or influenza. Wilkins also reported a case at 74 years of age. The usual age is from 20 to 45 years. The character of the pus as far as odor is concerned is sometimes foul, and sometimes free from odor. In one of my cases the odor was very offensive.

The disease usually runs its course in about fourteen days, although Dr. Thomas Evans relates a case that suffered for three months after the initial rigor. Some infections of the thyroid go on to absorption, and others to suppuration, and not infrequently, death.

Robertson, up to 1911, reported his observation on 90 cases in literature, of acute inflammation of the thyroid, with forty cases of suppuration and nine deaths. A few have from time to time, reported more than one case. Theisen especially, has made a report of seven cases. Wilkins reported 1, Baring 1, Evans 2, Phillimore 1, Melchior 2, Ransohoff 2, Roth 1, McArthur 5, Robertson 1, Stein 1, Bonney 1.

Traumatism does not play a part practically, but it is more often due to an extension of infection from some other part of the body by the blood or lymph stream. My one case apparently is the only one that had its origin in an acute abscess of the middle ear and mastoid process. There are no positive organisms that pre-dispose to abscess of the thyroid gland. The disease may follow typhoid fever, pneumonia, puerperal fever, diphtheria and erysipelas and go on to suppuration. Simple inflammation of the gland that goes to resolution are (according to Robertson), usually infected from an acute tonsillitis. Evidently a great many glands recover after infection, and later take on a disposition toward the goiterous type.

The typhoid bacillus seems to be the most prevalent cause of this disease and this was followed by streptococcus and pneumococcus. My two cases had never had any previous inflammation of the thyroid, nor have there been any untoward symptoms since their recovery. Theisen in reporting his cases of acute thyroiditis with one exception—all followed acute tonsillitis—two cases afterward developed into goitres. An acute pathogenic infection of a thyroid gland more often probably goes to suppuration.

O. J. Stein says it is not only the normal gland that is attacked in suppuration, but the disease may attack the hypertrophied or goiterous type. According to Evans, most of the abscesses have diagnostic signs after ten days, and long before palpation or redness of the skin is seen, continued swelling of the gland, peculiar dry sibilant voice and temperature, are the three characteristics of acute suppuration.

The form of infection varies in individuals. Ransohoff reports the examination of eleven cases which showed eight different forms of germs.

Berliner Klinische Wochenschrift, 12-14-14, Dr. E. Melchior reports two cases, thyroid abscess, post typhoid. His own case had typhoid in 1905, followed by gradual development of goiter. The symptoms

were severe and indicated malignancy. On removal of the gland an abscess the size of a hazelnut was found in the center. This abscess gave a pure culture of bacillus thphosis. Dr. Galis' case (*Deutsche Medizinische Wochenschrift*, 7-13-13), was that of a man operated twenty-three years before for goiter. He also had typhoid twenty-one years previous. Symptoms of acute Basedows disease, together with those of an abscess of the thyroid developed. This was treated with operation and drainage. Both cases recovered.

Infection in typhoid usually follows after the third week, and during the stage of resolution. To repeat, the pus is sometimes foul and offensive as seen by Phillimore (*British Medical Journal*, June, 1899).

Schiller in his compilation of autopsies on subjects with tuberculosis, says that Virchow observed one case of thyroid abscess in pulmonary tuberculosis, and Connil and Ranviser (*ibid*) one case of military tuberculosis of thyroid. Hegar found five cases of tuberculosis involvement of thyroid gland with caseous degeneration in 1567 post mortems on tuberculosis subjects.

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FURUNCULOSIS OF THE EAR CANAL.

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New York.

There is no more painful condition with which the otologist has to contend than furunculosis of the ear canal. This does not even except inflammation of the middle ear.

Furuncles are the result, in the majority of instances, of an infection of a hair follicle, the causative organism in most cases being the staphylococcus aureus. As a rule, the cases are not serious, but I have known of two patients who developed mastoiditis by a perforation of the pus through the posterior canal wall. The predominant organism in both these cases was the bacillus coli communis. The furuncle was caused by a scratch from a dirty finger nail. One of the patients died.

The site of an election for a furuncle is on the tragus, but such an infection may occur anywhere in the canal. I have seen multiple furuncles extending back as far as the membrana tympani. At first the patient may note merely a small, tender swelling—i.e., a "blind boil." Within a short time, however, a perichondritis develops around the "core" until the entire ear canal is closed. The intense pain is due to two factors—i.e., the perichondrial inflammation and the pressure on the inflamed parts.

Many patients have a tendency toward furunculosis especially those who have dry ear canals which

itch. The patient scratches or else uses some instrument in the ear. It is unnecessary to state that the use of any instrument in the ear canal is often harmful and leads to dire results. I operated on a child for acute mastoiditis a short time ago who stuck the end of a toy flag in her ear, by which she injured the canal and drum.

In the early stages of furunculosis, or in those who have a tendency to dry ears, one may avoid any serious developments in the majority of cases by the careful application of a one per cent. yellow oxide of mercury ointment.

It is almost impossible to open an ear furuncle under local anesthesia unless it is "pointing." The pain is excruciating. If gas is available, it should be used in preference to ether or chloroform. Many of these small abscesses are deep-seated. Before the anesthetic is administered, one should probe for the tenderest spot. An old, sharp Graefe eye knife is the best incisor to use. The incision should be made clean and deep until the seat of the abscess is reached. Frequently no pus can be seen, either because one has not reached to the deepest part or because the hemorrhage is so severe that it cannot be seen. However, even if the pus has not been reached, the tension is considerably relieved and the pus will break through in the course of a few hours. After incision, the canal should be packed with a thin strip of gauze soaked in a solution of aluminum acetate. The patient should be instructed to keep the gauze constantly saturated for the first twenty-four to forty-eight hours. A second or third incision may be necessary. New furuncles may form in other parts.

The treatment, as outlined above, will relieve the majority of cases. However, intractable cases are often met with, particularly in young, ill-nourished individuals who have no resistance. A few years ago I had a young man under my care who suffered from general furunculosis. He developed a furuncle in his ear canal which had to be opened five times. At the last operation a culture of the pus was made, from which an autogenous vaccine was prepared. Ten doses of the vaccine cured the condition—the operations did not.

11 West 81st Street.

Commercial Sexologists.

Our remarks upon Sex Huns in these columns have made some of the more offensive of them "nervous," and they have set themselves to composing hymns of hate of much poorer literary quality than the villainous Prussian utterance. The ruffianism of the aforesaid Huns is, of course, based upon fear. They have been exposed by the courts without abashment, but ridicule they cannot stand. Judging from the baseness of their attacks their panic must be great.

Some of these people have been great advocates of free speech of the thorough-going sort advocated by progressive thinkers like Theodore Schroeder, because they wish to publish scandalous sex literature. But it is curious to watch the effect upon these "radicals" of a little free speech directed against them. Immediately they resort to ruffianism, which denotes nothing but fear and hate and reveals the insincerity of their free-speech propaganda.

But satire is too fine a weapon to be used against such rats, at a time when great issues challenge the powers of conscientious writers.

The Diagnostic Laboratory

Conducted by CHESTER T. STONE, M. D.,
Brooklyn, N. Y.

Renal Function as Determined by Chemistry of the Blood and Urine.

In a complete examination of urine in a case of suspected nephritis, Spitz suggests (*So. Practitioner*) that the following chemical tests be made:

Quantity of Urine.—Normal, 1200-1500 c.c. Increased in contracted and amyloid kidney. Decreased in acute and chronic nephritides.

Albumin.—Found, as a rule, in all nephritic urine; large amounts relatively in acute and chronic parenchymatous nephritis; smaller amounts in interstitial nephritis. In interstitial cases negative results are frequently obtained; for this reason several specimens should be examined.

Sugar.—Occasionally encountered in cases of nephritis. This is usually temporary and is seldom present in large amounts.

Chlorides.—Chlorides are diminished in amount in all acute and chronic nephritides associated with albuminuria.

Phosphates.—Ditto.

Nitrogen.—An increase in nitrogen is sometimes noted in some cases of nephritis owing to the large albumin content but the rule is that the total nitrogen is diminished in all cases of nephritis. This is due primarily to the renal insufficiency and associated dropsy. Periods of increased elimination may alternate with periods of decreased elimination, so several examinations are necessary.

The amount of urea eliminated follows the amount of nitrogen elimination. In acute nephritis the elimination may or may not be decreased, according to the extent of renal insufficiency. In chronic nephritis it may fluctuate to a large extent. It may be normal in amount even though a large amount of albumin and many casts be present during the early stages; in the later stages it is greatly diminished.

Ammonia output is increased in uremia; in many cases of nephritis it is diminished.

Practically the same chemical elements appearing in the urine appear in the blood. The total non-protein nitrogen, which is the important factor from a diagnostic and prognostic point of view, is estimated at from 20 to 30 mg. per 100 c.c. of blood. It has been shown that particularly in interstitial nephritis there is an increase in the total non-protein nitrogen in the blood. In cases of hypertension the total is considerably increased. In cases tending toward uremia or showing uremia, the total is greatly increased, some cases having been reported with a total of 350 mg. per 100 c.c. of blood. From a prognostic standpoint it has been shown that patients with a high retention do not, as a rule, linger a very long time. It also furnishes a guide to the proper diet to be allowed nephritics as cases with high retention require restricted protein. In the few cases of eclampsia that have been reported on, there is very little retention and this factor may serve as a differential point.

Urea runs parallel with the total non-protein nitrogen. As urea is largely excreted through the kidneys serious disturbances of renal parenchyma should be associated with urea retention. It has, in fact, been found that the rate of urea excretion in the urine bears a definite relationship to the urea concentration in the blood (Ambard's constant).

Uric Acid.—Normal, 1 to 2½ mg. per 100 c.c. of blood. As the severity of the renal condition progresses the retention of uric acid increases. This retention precedes the urea retention, which is to say, that uric acid is retained first by a diseased or impaired kidney. In other words, a case showing retention of both urea and uric acid is more severe than one showing retention of uric acid alone.

Creatinin.—Meyers and Fine lay great stress upon creatinin retention, they having demonstrated that creatinin is retained practically in severe cases of interstitial nephritis only and that when the amount retained reached 5 mg. per 100 c.c. of blood the outlook was invariably fatal.

Salt and Water Retention.—The freezing point refractive index and specific gravity of blood serum are normally constants. In pathological states they not only deviate from the normal but vary independently of one another. In water retention (hydremic sera) the refractive index and specific gravity are lowered. In salt retention the freezing point is raised (concentrated sera).—(*Urologic and Cutaneous Review*, June 17.)

Reliability of the Wassermann Reaction.

Ottenberg says divergent reports on identical serums sent to different laboratories occur and will continue to occur so long as laboratory workers continue to use widely different technical methods. These divergent results, however, should not lessen confidence in the clinical specificity of the Wassermann reaction. They almost invariably occur in cases which exhibit weakly positive reactions, and they usually mean that one laboratory has succeeded in detecting a weakly positive reaction, while the other has not. In the great majority of cases which present definite positive or definite negative results the reports of different laboratories are practically uniform. The reason for the divergence in the results on weakly positive cases is that some laboratories have adopted certain refinements of technique which other laboratories have for various reasons failed to adopt. The original Wassermann technique, while safe in the sense of not giving false positive results, is not nearly so delicate in detecting positive tests as it can be made. There are so many pitfalls in the performance of the Wassermann reaction, that, while the technique may be seemingly easily learned, the inexperienced operator may obtain many erroneous results.—(*Arch. Int. Med.*, p. 157, 1917.)

Ascending Infection of the Urinary Tract.

D. N. Eisendrath and G. T. Schulz have studied the path of involvement in ascending infections of the urinary system in dogs and rabbits (*Journ. Med. Research*, January, 1917). The study was made by introducing cultures of microbes into the bladder, with every precaution against injury of the bladder or ureters. At varying intervals of time the animals were killed. Cultures were made from the heart, kidneys and bladder, while serial sections were cut through the whole of the tissues from the kidneys to the bladder. The material was imbedded in paraffin before section. The sections were made parallel to the ureter, so that each section passed from the bladder to the kidney. Two series of experiments were made. In the first series, five rabbits and eight dogs were injected with *B. coli*, three rabbits and four dogs with *S. aureus*, and three rabbits and four dogs with *B. proteus*. Eleven dogs and twelve rabbits were used to form a control series in which no germs were placed in the bladder. In the second series female dogs were used. Three were injected with *B. coli*, four with *aureus*, and four with *B. proteus*. The observations on the anatomy of

the animals have demonstrated the existence of a network of lymphatics extending from the bladder along the ureters to the renal pelvis. The lymphatics of the pelvis of the kidney communicate with those of the parenchyma of the kidney. On the cortex of the kidney the lymphatics continue into the peri-renal tissue. The experiments showed that germs present in the bladder could pass by these lymphatics into the kidneys. The degree of involvement depends on the virulence of the organisms and the susceptibility of the animal. In five out of 39 experiments the bacilli had not spread up the ureters. The infection spreads from the pelvis of the kidney of the kidney along the intertubular and perivascular lymphatics. A connexion with the lymphatics of the genital organs was noted in the female dogs.—(*Jour. Med. Research*, Jan. 1917).

Some Experience Bearing on the Medicolegal Value of the Precipitin Test for Human Blood.

Hunt and Mills, having failed in the attempt to identify by the precipitin test a specimen of blood from a medico-legal case, beyond the general statement that it was of mammalian origin, studied the method further.

The sera were prepared by immunizing rabbits with intravenous injections of fresh human blood, injecting 2 or 3 ccm. every five days, for three doses. One effort was made to apply the rapid method of Fornet and Mueller, giving intraperitoneally three doses of defibrinated blood of 5, 10, and 15 ccm. respectively, on consecutive days. The reaction of immunity attained its high point on the fourteenth day after the last dose, remaining there for about five days, then receding. Blood was obtained in quantity by cardiac aspiration, test portions being obtained by aspirating the ear vein. Death of a rabbit from anaphylactic shock was not uncommon, the third dose being usually the first to be dreaded. Fourteen rabbits were immunized, of which seven gave workable serum (i.e., a titer of 1:1000 to 1:2000), three gave sera of fairly high value (1:5000 to 1:10,000). None gave serum of the high value recommended by Uhlenhuth (1:20,000), who stated that not infrequently only one rabbit in ten produced a high titer serum.

In carrying out the test, Uhlenhuth's technique was followed, and the controls were (1) the test solution against normal rabbit serum, (2) fresh human serum against the antiserum, (3) serum of some lower animal 1:200 against the antiserum, (4) of some other animal ditto, (5) 0.85 saline, (6) an extract of the fabric from which the stain was taken. From the results attained, the following conclusions were drawn:

1. The precipitin test, when it reacts, is a valuable and positive method of identifying blood stains. A negative test does not of itself disprove the presence of the homologous blood.
2. A serviceable serum may take weeks to prepare, consequently a supply of adequate sera should be kept on hand, in order that blood stains need not be subjected to prolonged drying before testing.
3. In a murder case it would be of advantage to have blood from the victim in sufficient quantity to carry out immunization, thus being better prepared to obtain a serum of high specific value.
4. There may be individual variation in the power of blood to respond to the precipitin test; consequently failure to identify should not be considered final until other and stronger sera and the complement fixation test of Neisser and Sachs have been tried.—(*Bost. Med. & Surg. Jour.*, p. 48, 1917).

62 Pierrepont Street.

PERSONAL HISTORY OF APPLICANT FOR APPOINTMENT IN THE MEDICAL RESERVE CORPS, UNITED STATES ARMY.

Give your name *in full* (including your full middle name):.....

The date of your birth:..... The place of your birth:.....

When and where were you naturalized (if of alien birth)?

Are you married or single?..... Have you any children; if so, how many?.....

What is your height in inches?..... Your weight, in pounds?.....

Give the nature and dates of all serious sicknesses and injuries which you have suffered:.....

Do you labor under any mental or physical infirmity which could interfere with the efficient discharge by you
of the duties of a medical officer?

If either parent, or brother, or sister has died, state cause and age in each case:

Do you use intoxicating liquors or narcotics; if so, to what extent?

Have you found your health or habits to interfere with your success in civil life?

What academy, high school, college, or university have you attended? State periods of attendance from year
to year, and whether you were graduated, giving date or dates of graduation:

Name any other educational advantage you have had, such as private tuition, foreign travel, etc.:

Give all literary or scientific degrees you have taken, if any, names of institutions granting them, and dates:

With what ancient or modern languages or branches of science are you acquainted?

When did you begin the study of medicine, and under whose direction? His residence?

How many courses of lectures have you attended? Names of colleges and dates:

When and where were you graduated in medicine?

(Fill this out and send it to the Surgeon General, U. S. Army, Washington, D. C.)

Have you been before a State Examining Board? If so, state when, where, and with what result:

Have you had service in a hospital? If so, state where and in what capacity, giving inclusive dates of each kind of service:

What clinical experience have you had in dispensary or private practice?

Have you paid particular attention to any specialty in medicine; if so, what branch?

What opportunities for instruction or practice in operative surgery have you had?

Have you previously been an applicant for entry into the United States service? If so, state when, where, and with what result:

Are you a member of the organized militia? If so, state with what organization and in what capacity.

Have you been in the military or naval service of the United States? If so, give inclusive dates of service with each organization, designating it:

In case of war or threatened war, will you accept active service for duty with the Army, should your services be needed?

What occupation, if any, have you followed other than that of student or practitioner?

Present or temporary address:†

Permanent residence:†

I CERTIFY that to the best of my knowledge and belief the above statements are true.

Signature *EF*

Date,, 191

Subscribed and sworn to before me, this.....day of.....A. D. 191

[SEAL]

[Signature and official title.]

†The candidate should give his present address for correspondence, and also his permanent address to which he desires commission sent should he be appointed.

FORM 148
W. D. S. G. O.
(Revised March 6, 1912)

MEDICAL TIMES
July 1, 1917

M. D.

OF

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FURNISHES PERSONAL HISTORY

IN CONNECTION WITH

APPLICATION FOR APPOINTMENT

IN THE

MEDICAL RESERVE CORPS,
U. S. ARMY

Indorses

The Medical Times

A MONTHLY JOURNAL

OF

Medicine, Surgery, and the Collateral Sciences

ESTABLISHED IN 1872

EDITED BY

H. SHERIDAN BAKETEL, A.M., M.D.

ARTHUR C. JACOBSON, M.D.

Associate Editor.

Contributions.—EXCLUSIVE PUBLICATION: Articles are accepted for publication on condition that they are contributed solely to this publication.

When authors furnish drawings or photographs, the publishers will have half tones and line cuts made without expense to the writers.

SUBSCRIPTION RATES:

(STRICTLY IN ADVANCE)

UNITED STATES, (Including Alaska, Cuba, Mexico, Porto Rico, Hawaiian and Philippine Islands)	\$1.00 per year
CANADA, FOREIGN COUNTRIES IN POSTAL UNION,	\$1.25 per year \$1.50 per year

SINGLE COPIES, 15 CENTS

Definite written orders for THE MEDICAL TIMES are required from all subscribers, to whom the journal is thereafter regularly forwarded. Notify publisher promptly of change of address or if paper is not received regularly.

All communications should be addressed to and all checks made payable to the publishers,

MEDICAL TIMES CO.

ROMAINE PIERSON, *President and Treasurer*H. SHERIDAN BAKETEL, *Secretary*

81 Fulton Street, - - - New York

Entered as second-class matter, Post Office at New York, N. Y., Act of Congress of March 3d, 1879.

NEW YORK, SEPTEMBER, 1917.

No Conscriptio of Medical Men.

It is a matter of keen satisfaction to know that there will be no necessity to conscript medical men for the national army. Lt. Col. Robert E. Noble, U. S. A., personnel officer of the Surgeon General, advises the MEDICAL TIMES that "the prospects are excellent for obtaining by the first of January the number of medical officers needed for the service."

This is gratifying information and demonstrates what we have already reiterated—that the medical profession of the United States has never been tried and found wanting.

Up to date over 14,000 physicians have been recommended by Surgeon General Gorgas to the Adjutant General for commissions in the Medical Reserve Corps and of these over 9,000 have accepted their commissions. If the physicians of the country will give heed to the call for medical officers there will be no difficulty in obtaining the required number voluntarily.

May we again direct the attention of physicians to the requirements of the new armies. Medical officers are needed for the cantonments, the base hospitals, the ambulance companies, for recruiting, for the over-seas transports, as well as for service in Europe.

We believe it is the patriotic duty of medical men to do their bit. Some men are prevented by age, infirmities or special duties from volunteering, but each one knows some young man, whose family or professional duties do not prevent him from accepting army service. We earnestly appeal to all physicians, whatever their status, to consider well the fact that we are at war and that physicians are required to care for the health of the khaki-clad young men who will soon fight in defense of our national honor.

Let our slogan be, "I will do my part," and let each one of us commence to *do it now*.

The application blank published in this issue of the MEDICAL TIMES makes the first step easier.

Doctor, do it, and do it now.

Birth Control and War.

It is obvious that war upon the scale that we have witnessed during the past three years is made possible only by numbers. Were populations normal national aggressiveness would not be so marked, and the chances of war correspondingly reduced.

Suppose, for example, that populations everywhere were limited as they are by the very intelligent Dutch. They have made the population of Holland conform to the economic and geographic limitations of the country. When other countries have learned to do this we shall have a better world.

Germany is fighting for a supremacy which, were she to gain it, is already doomed to deterioration, because with further enlightenment her people will cease to breed as they have in the past, and so make less possible the control of a far-flung empire.

When we say deterioration, we should better say non-material progress, for the real greatness of a nation should not consist in sprawling imperially over the planet, holding a string of small nations in subjection, and accumulating untold wealth.

When will human society become intelligent enough to cease to respond to the demands of the industrial and military machines in old-time fashion? Our answer is: when rational control of the birth rate is practiced by highly civilized national groups determined to get something more out of life than wealth and imperial power and what now seems to be the joy of brutalizing the masses. In other words, when democracy has been made safe for the world.

Empires have always decayed for one reason or another. Today the supremacy of Britain herself is challenged by two forces: military aggression and the growing enlightenment of her own people, which will manifest itself, among other ways, in the form of rational birth control.

What boots it then, *for imperialism*, which side wins the war? The handwriting is upon the wall in any case.

Something, however, really will have to be done about the teeming millions of China. What a spectacle as a human rabbit hutch such a nation affords—and what a menace looms there for a world which will soon see its organized civilizations curtailing mere numbers.

We opened up China to the world's civilization, such as it has been and is. Perhaps we shall yet send medical missionaries to China to instruct her in birth control. It would be a wise policy, both on selfish and unselfish grounds. But that possibility is at least ten years off.

Aesculapius Masquerades as Mars.

A distinguished alienist of Providence has taken the editor of the *Journal of the American Medical Association* to task because of his great restraint in answering a series of question asked by "a physician of Colorado," among which was one which excited the particular ire of the Providence man. This question was, "Is it possible for Seventh Day Adventists to get relief from duty, such as examining troops and such other work except caring for the sick, on Saturday?" The Providence critic wishes that the editor had answered the questions "vigorously."

What interests us in this matter is the intellectual attitude of the distinguished alienist himself toward war, which seems to us quite as curious as that of the Colorado physician. His chief grievance is that the Seventh Day Adventist appears to be "at heart a pacifist." This seems an unfortunate revelation of the Providence critic's mind, for why should men not be pacifists *at heart*? Who except the Junkers love to see men in a rat-pit? Why do we contend, granting that we are sincere, that this is a war to prevent war, if we are not pacifists at heart?

Even in the midst of the welter of blood that has engulfed the world we dare to deny that men at heart yearn for life-destroying strife.

Peace on earth and good will to men is much more than a phrase, except to the Kaisers, not all of whom rule in Germany.

"This generation," says David Lloyd George, "must eliminate war from the tragedies of human life."

The Twelve-Minute Physical.

Many of us were mildly astonished to learn from a member of the Army medical corps that a complete physical examination of a prospective recruit could be made in twelve minutes.

This war is proving a revelation in many ways. The profession has always entertained the notion that the men of the Army medical corps would themselves be among the first to decry hasty methods. We have been unable to dissociate scientific thoroughness from them.

No doubt twelve-minute examinations have had much to do with the frightful prevalence of tuberculosis in the French army.

There is no reason why the standards that have guided a man in his clinical work in private and hospital practice should be abandoned when he makes physical examinations for the Government services.

Such standards have not been abandoned by capable and conscientious men, in other words men of high standing in the profession.

No war conditions will ever bring that about, whatever the unseemly pressure or however unfortunate bureaucratic pronouncements may be.

Undesirable Recruits.

Osler is warning us against certain types of undesirable recruits: the mouth breather, the man with the Hippocratic chest, and the neurasthenic. Speaking of the last he remarks, suggestively, that he is usually keen to go. Beware the perfervid patriot.

Osler has been dealing with the wastage of the war. He has been studying the men who have broken down.

From our end of it—the recruiting end—we should note certain social elements bearing upon the question of fitness. For example, there is the man who, because of his neurotic constitution, has found the burdens of civil life altogether too great, and who seeks through military service an escape from such social obligations as pertain to his wife and children. He is found in all ranks of society, and may be encountered at all points along the recruiting line, trying to break in.

This very knave, and fool, is being hailed in some quarters as the man with the right spirit.

The fact is he is an undesirable in or out of the military establishment.

The Insane Soldier.

From eighteen to twenty per cent. of soldiers returned from the British front because of illness suffer from temporary or permanent mental breakdown. This

experience has stimulated our psychiatrists to take up the problem of insanity among the troops at the cantonments, with a view to early detection and prophylaxis.

Experts tell us that about one person in every one thousand suffers from mental disease in time of peace. They figure that the strain of mobilization alone will give a rate of about three to the thousand. During the Spanish War the rate was twenty to the thousand. In the Russo-Japanese war it was fifty to the thousand. The Canadian figures for the present war have been so great that they have been withheld except from especially accredited psychiatrists engaged in military prophylaxis in this country.

The increase in mental breakdown in the present war is ascribed to the effects of high-powered explosives. The aluminum shell is very devastating. It cannot be seen or heard until it bursts, and has a concussion so powerful that it will throw a man to the ground at a distance of fifty yards.

Strange to say, the Germans have attempted to use their institutional insane in the army. But it has been found that the insane do not make good soldiers. The annual report of the asylum at Stettin advises against any more of its inmates being conscripted for service with the colors. One would suppose that the Germans would have realized that such service was bound to be a failure, since the psychopathic soldier is so useless for military purposes.

The Stettin report says that "The asylums are proud that their inmates are allowed to serve the fatherland, but the results have not been satisfactory because the lunatics have generally proved to be an unbearable nuisance in the various armies in which they have served, refusing to obey orders, deserting from their companies and becoming vagrants. Hardly any are of real value for military purposes and many have had to be sent back to their asylums."

It is well that steps are being taken in this country to weed out the psychopaths even before they see service.

This is altogether apart from the problem of the military availability of the feeble-minded, for which much may be said.

A Cowardice Commission.

Cowardice is about to be studied scientifically, and a commission of medical scientists has been appointed by army authorities.

But what is cowardice? The dictionary defines it as want of courage, and courage is "the quality that enables men to meet dangers *without fear*."

But a writer in the *Sun* remarks that "The studies of this Commission and its efforts to identify and control the nervous malady which makes a man *unable to control his fears* will be most interesting."

Is cowardice, then, inability to control one's fears in the presence of danger, or is it the mere having of fears?

And is courage the quality that enables men to meet dangers without fear, or is it merely the quality that enables men to meet dangers without betraying fears?

Are some men actually fearless, and do they belong upon a higher plane than the men who merely succeed in controlling their fears? Are the men of the latter class really cowards? Should the normal man be fear-free, and is the man who has fears a neurasthenic or psychasthenic?

We suspect that the man who is quick to accuse his fellows of cowardice is merely displaying a defensive mechanism, or camouflage, as they say in France. The

country is full of such heroes at this time, and we respectfully suggest to the commission that the psychologic relation of this kind of ruffianism to cowardice be made the subject of inquiry, and that a comparison be instituted between our self-confessed heroes and the despised Rollands and Russells, with a view to determining just where the balance of courage lies in these interesting groups.

All these points seem to us to come legitimately within the scope of this commission's projected labors.

The Medical Profession Must Supply Its Quota of Surgeons for the Army.

In round numbers, there are about 150,000 physicians listed in our medical directories. Deducting from this number 50,000 names of those who are not in practice or are physically incompetent, there are 100,000 physicians available for service. Of this number the Surgeon General's Office requires 20,000, or one-fifth of the active practitioners, as officers in the Medical Reserve Corps of the United States Army.

The unfounded and possibly maliciously circulated reports of the casualties among the medical profession in the armies abroad have deterred many from applying for commissions. In reality the number killed on the entire Western front from the beginning of the war to June 27, 1917, a matter of three years, was 195.

The lowest commission offered a doctor is First Lieutenant who draws in pay \$2,000 a year; Captains receive \$2,400 and Majors \$3,000. The cost of equipment is about \$150.00 to \$175.00, according to the desires of the individual.

The principal outlay of the army surgeon is for food, averaging about \$25 a month. A First Lieutenant should at the end of the year be able to send home or bank about \$1,700, a Captain about \$2,000 and a Major \$2,500.

While this information is of interest to those contemplating applying for commissions in the Medical Reserve Corps, the fact remains that in America we have more than a sufficient number of doctors to adequately supply the demand of the Surgeon General's office without hardship to the civilian population.

The need of doctors is not alone for the mobile army but also in concentration camps, evacuation hospitals, base hospitals and on transports. It is of decided advantage to volunteer services and receive the benefit of the very necessary training accorded physicians in medical training camps. It is a safe assumption that for those who receive such training and show their aptitude for the service, advancement will be rapid.

The application blank for a commission in the Medical Reserve Corps will be found in this issue of the MEDICAL TIMES.

Micromethod Test for Albumin in the Urine.

Deiters relates that the findings are more distinct when a small amount of urine is used, as he describes. An ordinary test tube is heated until the rounded bottom can be pushed in to make a small ball-shaped or conical depression in the lower end of the test tube. This can be treated with six or eight drops of nitric acid and the urine poured on top as usual. The turbidity resulting is more distinct than with the ordinary technic, as more light gets to the fluid in proportion to the amount of the fluid. The findings are distinct, even at 1:200,000.—(*Münch. med. Woch., J. A. M. A., March 10, 1917.*)

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

On the Writing of Medical History.

Most of us who attempt to write, or rewrite, medical history, make rather a sorry mess of it. This is one of the reasons why there is not more interest in this branch of medical literature on the part of the general profession. The old annals seem dry unless they have been passed through the magic prism of an Osler or a Walsh.

The man who can produce a very readable article or book on some contemporary phase of medical science or art is usually quite helpless when he attempts to recreate the distant past. There is no charm in his style and little more than the bare facts emerge out of the verbiage, the same facts that have been restated over and over again. Most of us are of necessity copyists when it comes to the writing of medical history.

Interesting attempts have been made by men really devoid of the faculty of history writing to "put over" old material which they have dressed up in a form which makes one think of a modern three-reel scenario, with a lot of colorature, flippancy and bad literary taste which the uninitiate mistake for brilliant treatment of the theme, but which make the cognoscenti weep. These writers melodramatize Harvey and Vesalius for the shallow lovers of thrillers, and truth comes out of the process greatly dishevelled. The trick palls dreadfully after endless repetitions, and even the most naive are fooled by the device only once or twice.

There is, of course, nothing of this crass legerdemain about the writings of our few masters. From them the cultured derive only enchantment.

The sleight-of-hand historian is always distinguished by a curious kind of bigotry in religious matters. He attempts to shock the reader at every opportunity by assailing religion and the religious, and is so narrow intellectually that he seems unable to see anything but conflict wherever science and religion touch. This is nothing but an insincere pose, adopted because artificial shocks are needed to bolster up the style and interest of the author's drudgery. He is determined to get a reaction on the part of the reader, but knows no legitimate method and possesses no natural inspiration and power of expression.

Garrison, in his *History of Medicine*, quotes his friend Dr. Robert Fletcher as having observed that medical history is "mainly repetition, mostly copying." Garrison remarks upon this that "It is in the nature of things that this should be so. The *Postament* (as the Germans say), upon which the subject rests, is the accumulated labor of the past. If we are to have a clear view of the panorama of medical history, we must necessarily stand upon the shoulders of our predecessors." So, supplementing the narrative portion of his work, Garrison has in an appendix a chronology which, he remarks, differs from those of Choulant and Julius Pagel in that its separate items are listed tandem instead of abreast. Even such a charming writer as Garrison can do nought at times but set down the bare facts much after the fashion of his predecessors, bearing heavily indeed upon their shoulders.

The sleight-of-hand historian reminds one a bit of a famous evangelist who is noted for taking sermons by great masters of the pulpit, even the utterances of the Master, and rendering them in a compound of George Ade, Billy Baxter and baseball diamond "English."

After the charm of Osler, the stateliness of Walsh, and the art of Garrison, such sacrilege in the field of medical history promotes emesis.

For ourselves, innocent of power in this difficult field of medical literature, we plead guilty to belonging in the copyist group. This is at least forgivable, which the sin of the cheap scenario maker is not.

Uncouth Pretenders.

The brazen appropriation of the ideas of other men which marks the activities of certain medical publicists is amusing to professional bystanders. A particularly flagrant instance may be seen in the case of birth-control propaganda. One would think to read the drool of these "leaders" that they had themselves inspired the movement and that without their brains and services it would have come to naught. The two thinkers whose ideas are most unblushingly exploited as the patented property of the propagandists are Drysdale and Havelock Ellis.

This is a typical instance of how small men climb upon the backs of great ones.

The squeaking of these pygmies proclaiming their eminence as thinkers and pioneers always raises the question as to whether they are merely cheeky egotists or paranoid types. Because of their total lack of the humor sense and their vicious reactions when prodded we incline to the latter view.

Weak men who are ambitious constitute one of our greatest professional curses. Such pretenders aim at the notoriety which nourishes them materially and psychically through deliberate raids upon the brains of really great thinkers.

The great view the performances of the weaklings with equanimity, which the great can always afford to do. And so Drysdale and Ellis simply smile.

When the uncouthness of personality and of mind which characterizes these intellectual parasites is considered, the humorous phases of their activities and pretensions become ludicrous indeed, after which comes a kind of pity.

War's Effect Upon the Degenerate Rich.

The reaction of the war upon the idle rich is furnishing an interesting spectacle. Hermione, the charity putter before the war, seems to be as great a menace during hostilities as in times of peace. She is frightfully active, but just as useless as ever. And Fothergill Finch, the poetic person whose aimless life in the shadow of Hermione has been so amusingly described by Don Marquis in the *Evening Sun*, is now writing verse dripping with chauvinism. He, too, is just as objectionable as ever.

And they are not pacifists, either.

"You musn't permit your war work to exhaust you," we warned Hermione.

"Nothing that I can do for the cause is too hard," she replied. "Only yesterday I put in an entire hour making all the servants buy Liberty Bonds. I'm going to have Papa take the instalments out of their pay, you know, whether they like it or not. I'm even thinking of buying one myself."—(*Even. Sun*, June 16.)

Hermione is the woman who, in time of peace, keeps the neurologists busy.

At last something has happened to keep this lady busy and give her a place of apparent importance.

But can a turn of affairs which actually puts a premium upon incompetence and degeneracy be socially wholesome?

An amusing story in a recent issue of one of the

great metropolitan newspapers hits off very well some of the activities of our Hermiones:

There was a sound of revelry by night—last night—the League having opened its grand house to entertain the soldiers and sailors at a smoker. The League can be friendly and social, even though mostly immersed in big undertakings. It has now been relieved by the Federal Government and by Gov. Whitman of the census, State and National, which it busily prepared to take some time ago, and that farm on the Boston Post Road which the agricultural committee of the League sent out so many announcements about a while ago is no longer occupying its attention. There are a good many difficulties in the way of tilling a farm out in the country, as the chairman of the agricultural committee explained to a search party that applied to her for directions to find it one day last month.

Various other activities about which the League's large and flourishing publicity department has sent out interesting notices, such as canteens for the army and navy, training ambulance drivers, wireless operators for the Government, etc., are being well attended to by the Young Men's Christian Association, Young Women's Christian Association and other organizations, all affiliated with the League and working in close connection with it. Lastly, the Council of Defence has taken from the League the burden it assumed, that of being the national clearing house for the woman power of the nation. So what more natural than that the League should relax a little and indulge in the light and pleasant if important duty of entertaining the boys in khaki and in blue?

PUNCH WEARS A DISGUISE.

The smoker began at 7 and ended at 10. Long before 7 the spacious rooms of the mansion assumed a festive aspect, a punch bowl and many glasses being set forth on a table right before the entrance, though not near enough the steps for even a sailor accustomed to peer for distant submarines to discern that the punch was William J. Bryan's own favorite drink. He had to get right among the alert reception committee before he could see what the punch was.

Flags waved from the winding stairway, and a careful woman of the League spent the afternoon winding red tape between the rather wide apart supports of the railing, so the bluejackets and the boys in khaki couldn't fall to the floor below in a moment of excitement. Upstairs tables were set forth with games—checkers and Authors and so on, and the piano in the reception room below was tuned for the occasion. As the hour approached many women of the canteen committee, the motor drivers committee, the agricultural committee, the wireless committee, the course in nursing committee and the various other committees filled the house, intent on making the soldiers and sailors feel at home.

The motor drivers were in their natty little khaki chauffeurs' uniform, and the nursing committee were in blue checked gingham dresses and white caps; others wore the League uniform, and still others were in evening gowns, so the scene was gay and festive and only needed the soldiers and sailors to give it the final touch.

A SAILOR POPS IN.

Time wore on. The sound of revelry aforesaid rose from the reception room in the rear, where the younger members of the League gathered around the piano and sang songs calculated to charm the soldier and sailor breast if any had been near enough to hear. By and by one did come. He was a sailor, young and fair, and the welcome he received from a large group of watchfully waiting women was almost disconcerting, it was so warm. He had seven as an escort, while six more rustled around for cigarettes, and the fact that these had been mislaid was no reflection on those who arranged the smoker. Cigarettes aren't everything there is to a smoker, and anyhow they were finally found.

This was not the only sailor who came. Several more appeared later on, and no doubt if the war with Germany doesn't warm up later on the smokers of the League may become the popular and crowded affairs with the army and navy which they deserve to be.

Reinfection in Lues.

Lichtenstein relates the history of a case in which a soldier reinfected himself by his wife who was formerly infected by him. The immunity after lues may already cease in the first year after the first infection so that a reinfection by means of the spirochetes which caused the original infection but retained their virulence may take place. The cessation of the immunity demonstrates that in this case the mercury-salvarsan treatment did not accomplish a cure in the bacteriologic-serologic respect.—(*Wien klin. Woch.*)

The American Association of Clinical Research

JAMES KRAUSS, M. D., Permanent Secretary and Editor.

SOME WONDERS IN PHYSIOLOGICAL CHEMISTRY.*

WILLIAM A. PEARSON, M. D.

PRESIDENT THE AMERICAN ASSOCIATION OF CLINICAL RESEARCH.
Philadelphia, Pa.

"The scientific wonders in this world of ours are numerous but it is doubtful if any can be found more interesting than in the realm of physiological chemistry. It would be absurd to state that we now know with certainty or even faintly appreciate many of the wonders of physiological chemistry—for these phenomena are so intimately entwined in the life functions and of life itself that our present limited knowledge is entirely inadequate. Nevertheless some of the wonders of physiological chemistry may be presented with some certainty.

In order that we may have the proper view-point let us consider that all life is molecular and that the cell is not necessarily the unit. The cell may properly be considered the morphologic unit but many important physiologic transformations take place where no cell is involved. The blood has just as much right to be considered a tissue with certain definite functions to perform as the liver yet it is not customary to consider the blood as a tissue. The point I wish to make is that the morphologic cell is not essential to a physiological reaction. Since every living cell contains protein and many fluids containing proteins are living, why not consider the unit of life the protein molecule?

The best definition of life is one that realizes that life is simply a continuous change—an analysis with synthesis catabolism and anabolism. The protein molecule certainly is alive for it is constantly undergoing changes both analytic and synthetic. When decomposition only takes place the protein is dead—and may by this decomposition be furnishing material for the life of another protein or cell.

The same basic law that death is necessary to life holds equally true with the protein as with the cell. That proteins are complicated may be shown by the variety of their decomposition products as well as by their slight lowering of the freezing point of their solutions, electrical conductivity and different dialysis.

Ehrlich's side chain theory of immunity applies equally well to a single protein as to the individual cell and in the last analysis is in perfect accord with modern organic chemistry. The protein molecule contains numerous combinations of amido acids held one to another by the union of the basic amidogen (NH_2) group of one combined with acid carboxyl ($COOH$) group of another. Several of these amido acids contain the benzene nucleus and Vaughan has conclusively shown that every protein contains the same toxic nucleus and it is probable that one protein differs from another simply in the number and complexity of its side chains.

The whole idea of immunity can thus be explained by the character of these side chains. One side chain being so constituted as to combine with and render non-toxic the specific toxic portion of the detrimental invading protein which has been developed by a micro-organism or a foreign protein. Anaphylaxis is thus

logically explained and also variations in opsonic index as well as other ideas of immunity. Enzymes are all probably protein in character, at least it has been impossible to prepare any active enzyme that is not associated with protein. Possibly enzymes are specific side chains split from protein.

Many physiological reactions are said to be due to enzymes yet it is certain that other factors must be considered, such as ionization, concentration and other physical chemical phenomena.

The process of digestion is a wonder of physiological chemistry. The secretion and action of saliva, gastric juice, pancreatic juice and intestinal juice affords opportunity for unlimited research. The splitting of the protein molecule largely into amido acids, the carbohydrates largely into dextrose and the absorption of fats are truly wonderful yet largely synthetic.

In the liver, physiological chemistry is at its best. Consider not only the synthesis of simple carbohydrates into glycogen, but also the formation of urea, the decomposition of glycogen and numerous other reactions brought about by specific enzymes. The surgeon has a special regard for the liver because he has never been able to practice his art on this organ. The liver is a chemical laboratory par excellence with all the refinements of chemical technology even to dumping of waste products in the river (intestine) where these waste products (bile) have a function to perform.

The chemistry of the muscle is also interesting and complicated as is the chemistry of the blood, kidneys and nervous system. Physiological chemistry has made rapid and important advancement in the last decade and promises to make even greater progress in the next.

In conclusion let me simply mention a few more wonders of physiological chemistry.

- 1.—The uniformity of dextrose and uric acid in the blood.
- 2.—The nearly constant ratio of nitrogenous products voided in normal urine.
- 3.—The control of body temperature.
- 4.—The destruction of excess protein and carbohydrate with the formation of fat.
- 5.—The production of glycogen and fat as reserve materials.
- 6.—The repair of tissue.
- 7.—Role of proenzymes and antienzymes.
- 8.—Old age.

Hahnemann Medical College.

Ninth Annual Meeting of American Association of Clinical Research.

Time: September 13, 14, 15, 1917.

Place: Lecture Hall, Boston Society of Natural History, Corner Boylston and Berkeley Streets, Boston, Mass.

Sessions: 10 a. m. to 1 p. m.; 3 to 6 p. m.; 8 to 10 p. m.

1. Call to order.
2. Introduction of President and vice-Presidents.
3. Opening Address by the President—William A. Pearson, M. D., Philadelphia, Pa.
4. Report of the Secretary and Treasurer.
5. Nomination and election of officers.
6. The next place of meeting.
7. New business.

* Opening address for the ninth annual meeting of the American Association of Clinical Research at Boston, Sept. 13, 14, 15, 1917.

8. Committee reports:

Research: H. Lyons Hunt, M. D., New York;
Wm. A. Pearson, M. D. Philadelphia;
W. H. Nowell, M. D., Boston.

Educational: John Hall Smith, M. D., Boston; G.
Betton Massey, M. D., Philadelphia;
M. W. McDuffie, M. D., New York.

Journal: Alfred W. McCann, A. B., New
York; E. W. Young, M. D., Seattle,
Wash.; Alice Conklin, M. D., Chi-
cago.

Membership: D'l E. S. Coleman, M. D., New
York; J. D. Gibson, M. D., Denver,
Col.; Alonzo J. Shadman, M. D.,
Boston.

9. A Mosquito Campaign in the City of San Pedro de Macoris, Salustiano Fanduz, M. D., San Pedro de Macoris, R. D.
10. Medical Education, John Hall Smith, M. D., Boston, Mass.
11. Trauma: Consequences and Treatment: Malinger-ing, Curran Pope, M. D., Louisville, Ky.
12. Infection: Prevention and Treatment, Wm. Marshall McDuffie, M. D., New York, N. Y.
13. Chronic Rheumatism, F. St. Clair Hitchcock, M. D., Greenwich, Conn.
14. Abdominal Adhesions, Alonzo J. Shadman, M. D., Boston, Mass.
15. Mechanical Therapeutics: Modern Advances, Dr. R. Kendrick Smith, Boston, Mass.
16. Practical Applications of Physiological Chemistry, Wm. A. Pearson, M. D., Philadelphia, Pa.
17. Dietetic Principles, Roger Sherman York, M. D., Boston.
18. How to Feed America at War with Waste, Alfred W. McCann, A. B., New York.
19. The Effects of the War and Clinical Research, James Krauss, M. D., Boston.
20. Other papers.
21. Clinics.
22. Report of Executive Committee, Doctors Pearson, Griswold, Monson, Krauss, Craig.
23. Unfinished business.
24. Banquet, Speeches.

For applications for membership and other information, address the Permanent Secretary, James Krauss, M. D., 419 Boylston Street, Boston.

On the Comparative Influence of Morphin and Total Opium Alkaloids on Renal Colic.

David I. Macht of Johns Hopkins made a pharmacological study of the action of opium alkaloids on the ureter and found that morphin and codein stimulate its contractions and increase its tonus, while papaverin and narcotin inhibit the contractions and relax the tonus. Furthermore, small doses of papaverin can overcome the spasm produced by large doses of morphin. This is shown by experiments on the isolated ureter of the pig and also from the operating room and is further corroborated by observations of the ureters in situ in anesthetized animals. In ureteral colic there is a marked spasm of the ureter. Morphin, therefore through its local action, aggravates the condition. Hence its frequent failure to relieve renal colic except when given in large doses. The relief is induced by morphin only through the narcotic action on the brain. Pantopon (Sahlis mixture) or opium, on the other hand, contain enough of papaverin and narcotin to counteract the spasmodic effect of morphin, and hence are more useful in treating colic. Papaverin, moreover, can be given alone, and that not only by injection subcutaneously, but also by direct application to the ureter through the cystoscope, and its toxicity is not great.—(*Jour. Urology*, No. 2, 1917.)

The least a physician gets in government service is \$2,000 a year. No family will suffer on that income.

Diagnosis and Treatment

Some Varieties of Congenital Heart Disease.

Findlay and Martin describe two cases of congenital heart disease. In a case of congenital stenosis of the pulmonary tract with atresia of the orifice—septal defects and patent ductus arteriosus, a child of 3 months, the mother noted that when it was 2 weeks old, its body was of a bluish tint. Since that age it had a cough and was subject to "peculiar turns," in which the cyanosis became very marked and the breathing stopped. Examination of the heart did not disclose any enlargement of the precordial dulness and the heart sounds were pure. The pulse was 140-150 a minute. Autopsy revealed a congenital stenosis of the pulmonary tract with atresia of the orifice, incomplete interventricular septum, patent ductus arteriosus and patent foramen ovale. The primary factor in this case is a defective development of the pulmonary tract. The septal defects are inevitable consequences of the pulmonary atresia. The fact that the pulmonary orifice was completely occluded accounts for the absence of any murmur indicative of pulmonary stenosis.

The second case was one of congenital stenosis of pulmonary tract, with septal defects. This child was two months old. It was under observation in the hospital on account of a stationary weight. It was cyanosed and presented great distension of the veins over the chest and abdomen. The pulse was small and could not be satisfactorily counted. The precordial dulness was slightly enlarged to the right and all over the heart could be heard a blowing systolic murmur, with its seat of maximum intensity at the base. The second sound at both pulmonary and aortic areas was loud and sharp. While under observation the intensity of the cyanosis varied and at times the murmur could not be heard. Post mortem revealed an example of the commonest type of congenital heart disease, i. e., the combination of pulmonary stenosis with patency of the inter-ventricular and inter-aortic septa.—(*Glasgow Med. Jour.*)

Cardiac Neurosis—Functional Disorders of the Heart.

E. E. Cornwall observes that certain disorders of the heart which are apparently due to disturbing impulses which come to it through its nervous connections, and for which no basis in organic heart changes can be found, are classed, pending increase in pathological knowledge, as cardiac neuroses. The disturbing impulses may come from anatomical derangements which interfere with the free action of the heart, viz., flat chest, curvature of the spine, pleuritic adhesions, obesity, tight lacing, abdominal flatus, and an unusually long thorax or a depressed diaphragm (due to enteroptosis) which produces cardiopneumosis. They may come as a result of visceral reflexes, viz., from swallowed air, which also may act mechanically to raise the diaphragm, and from irritation of the stomach and intestines by their contents, particularly by excess of hydrochloric, lactic and butyric acid. They may come as reflexes from the sexual organs. They often come from toxic irritations, particularly those produced by the intestinal toxins, and by alcohol, coffee and tobacco: the writer has seen anginoid symptoms brought on in a neutrotic patient by a few whiffs of a cigar. They may be due to anemia. They occur frequently as a result of emotional excitement.

The symptoms are sensory and motor. The former are the most common, or, at least, the ones most often complained of by the patient. They include: Palpitation, tenderness over the precordium, abnormal sensations in the region of the heart, particularly pain, a sense of constriction and symptoms simulating those of angina pectoris, and sometimes sensations of a strange and fanciful character. The principal symptoms due to motor disturbances are those associated with cardiac arrhythmia and weakness of the heart action, including among the latter, fainting spells. Neurasthenic and psychasthenic symptoms are often associated with the local cardiac symptoms. The blood pressure is usually low.

The diagnosis, which is not always easy, is made chiefly on the symptoms, the presence of a source of nervous irritation, and the absence of signs of an organic heart lesion. If evidences of a heart lesion are found, it is well to give them full credit, even though they may be apparently overwhelmed by the neurotic symptoms. A mitral systolic murmur, however, which is audible only when the heart is overacting, and which is unaccompanied by a permanent increase in the area of cardiac dulness, usually may be interpreted as a functional origin; and cardiac arrhythmia, of which the patient is subjectively conscious, in the absence of other signs of organic heart disease, can usually be referred to a functional origin; but, if the arrhythmia is not attended with subjective sensations it is

safest to interpret it as an evidence of myocardial disease. Ability to undergo physical exertion of considerable severity without dyspnea, suggests a functional condition. The neurotic character of a cardiac pain may be suspected if it originates spontaneously, that is, independently of physical exertion or mental excitement. A personal or family history of neurasthenia, hysteria, hypochondria or the neurotic temperament, strengthens the diagnosis of a functional disorder. In any case where the patient is past middle life the diagnosis must be doubtful.

Gastric Ulcer.

Levy says the Röntgen rays give us valuable aid in the diagnosis of ulcer of the stomach. The signs may result either from anatomical or physiological disturbance. In general it may be said the more chronic the ulcer, and the greater the anatomical deformity resulting therefrom, the more certain the Röntgen diagnosis. The ulcer leading to pyloric obstruction, to hour-glass deformity, to the "Nische," is readily diagnosed. In some acute cases the incisura, the delayed motility due to pylorospasm, and the sensitive spot, are suggestive. In some cases, especially in the very superficial ulcers, the x-ray findings may be negative. Among the anatomical signs, the incisura is sometimes encountered with ulcer. It results from a spasmodic drawing in of the wall of the greater curvature. The incisura, when present, is quite constant. Atropine may, however, relax it. It is also encountered, but more rarely, with ulcer of the duodenum, with gall-bladder disease, with chronic appendicitis, or any other irritation of the gastrointestinal tract.

The chronic ulcer with pyloric obstruction is readily recognized. The stomach is enormously enlarged, and owing to the atony the opaque meal drops to the bottom of the organ. The peristaltic waves are usually shallow, although in some cases exaggerated as the result of hypertrophy of the walls. There is a marked disturbance of the motor function, the bismuth sometimes remaining in the stomach for days. The rest is half-moon shaped, and considerably to the right.

Haudek has called attention to the "Nische" as a symptom of ulcer. It is found in chronic ulcers with a crater, and particularly in ulcers that have penetrated into neighboring organs like the liver or pancreas. When the crater of the ulcer is still within the stomach wall, it shows itself like a small bud projecting outward from the main bismuth shadow. It is usually found on the lesser curvature. When the ulcer has penetrated into the liver or pancreas, forming the so-called "Ulcus Penetrans Callosum" of Haudek, there is a large pocket in which the bismuth settles and remains. Above this there is a layer of fluid surmounted by a gas bubble. These ulcers are associated with hour-glass contraction, and consequently lead to characteristic deformity.

An hour-glass stomach is not infrequently encountered with ulcer, even without the "Nische." The stomach is made up of two pouches, the food first enters the upper pouch, and gradually finds its way through a narrow channel into the lower one. The deformity may be extensive, the connecting channel usually follows the lesser curvature. The diagnosis of hour-glass stomach rests entirely with the röntgenologist, and not with the surgeon. The operating table, with the stomach empty and collapsed, is not the place to make this diagnosis.

Haudek lays great stress on hypomotility as a sign of gastric ulcer. He claims that he always finds it in the florid ulcer. The delayed emptying is not necessarily due to the pyloric obstruction, but to the reflex spasm of the pylorus. While a six-hour rest is frequently encountered with gastric ulcer, it is not so constant that its absence rules out this lesion.

Holzknicht has called attention to "Schnecken" or "snail" form of stomach as significant of ulcer. The pylorus is found higher and more to the left than normal. In conjunction with other symptoms or signs, this form of stomach may be of some diagnostic value, but alone it is of comparatively little.—(*Arch. Diag.*)

Accessory Food Factors (Vitamins).

H. D. Dakin observes that in recent years biochemical studies have indicated the necessity of the presence of certain substances in relatively small amounts in order to make an otherwise ample diet adequate for maintenance or growth. The earliest experiments of this kind were made at Cambridge by Professor Hopkins and Miss Wilcox. They found that mice furnished with a diet containing liberal amounts of fat, carbohydrate, and protein, which were much more than sufficient to furnish the energy requirements of the organism, failed to sustain life if a particular amino-acid, discovered by Hopkins, was not a constituent of the protein. This heterocyclic amino-acid, tryptophane, systematically named indole α -aminopropionic acid, was found as a constituent of many

proteins, but not all. It is absent, for example, from gelatine, this being one reason why gelatine is an incomplete protein food. Hopkins and Wilcox found that addition of small amounts of tryptophane to the inadequate diet just referred to was followed by marked improvement in the condition and duration of life of experimental animals. A most valuable discussion on the importance of individual amino-acid groupings in proteins for nutrition and growth has recently been published by Hopkins in his lecture at the Chemical Society, May 18, 1916.

Later experiments showed that young animals could not grow when fed upon so-called "synthetic" diets consisting of mixtures of pure proteins, fats, carbohydrates, and salts, although maintenance might be secured for a considerable time. But Hopkins found that a substance or substances found in normal foodstuffs (for example, milk) can, when added to the dietary in astonishingly small amounts, secure the utilization for growth of the protein and energy contained in such artificial mixtures. The significance of these observations with regard to diseases such as scurvy, rickets, and beri-beri was at once apparent.

Later work by Hopkins, and a host of followers, has served to emphasize the importance for nutrition and growth of these small amounts of substances which are often called "accessory factors" or "vitamins." Some of the substances which are found in milk, yeast, whole rice meal, and animal tissues, are extraordinarily potent in the relief of polyneuritis induced experimentally in birds by feeding on a "vitamin" free diet of polished rice. The exact nature of these substances is still obscure, although Funk, working at the Lister Institute, Suzuki in Japan, Moore and co-workers, Cooper, and others, in England have obtained partly purified basic products of high potency. The practical importance of these studies has been amply justified by the success obtained in the prevention of scurvy, beri-beri, and similar nutritional disorders among troops operating under conditions which render the abundant supply of fresh food difficult or impossible. By supplementing the diet available under such circumstances with small amounts of material rich in "vitamins," it has been possible to restrict the development of the disorders mentioned in a way that would have been impossible even a few years ago. A large number of experiments as to the most practical form of supplying the needed vitamins has been carried out under the direction of the authorities concerned, who were keenly alive to practical lessons to be learnt from the laboratory studies just referred to.

It is of interest to note that some recent experiments of Williams upon the curative action of various substances on experimentally induced polyneuritis in birds appear to show that certain synthetic pyridine derivatives containing a betaine-like ring possess this property in high degree. A substance intimately related to the purin compound adenine has been isolated from yeast, and also found to exert curative action. The necessity for purin derivatives for the synthesis of nuclear substance *in vivo* is noteworthy in this connection. It may reasonably be expected that the more intimate analysis of metabolic processes which is being made possible by the pioneer work of Hopkins will find many applications in the treatment and prevention of nutritional disorders.—(*Brit. Med. Jour.*, June 23.)

Comparative Gravity of Left and Right Pulmonary Tuberculosis Location.

In studying the statistics of artificial pneumothorax, Tecon and Aimard, (*Rev. méd. de la Suisse Rom.*, 1917, xxxvii, 45), were impressed by the fact that the great majority of these had been done on the left lung, the proportion being 61 per cent. for the left and 29 per cent. for the right lung. Reviewing the literature the authors find this fact verified in other reports. They have studied the observations of 2,000 cases of pulmonary tuberculosis at Leysin, averaging 30 years of age. There were 1,342 men and 658 women.

Dividing these cases into three groups: There were 516 patients in the first group, in which recovery was the usual result. There were 142 with tuberculosis of the left lung with 83 per cent. of recoveries. There were 374 cases of tuberculosis of the right lung, of which only 7.5 per cent. were cured.

In the cases in the second group in which the presence of the Koch bacillus was verified in the expectoration, there were 1,052 patients. Of these, 472 had a left lung location, with 7 per cent. deaths, 53 per cent. ameliorations, and 11 per cent. cured. There were 580 cases of tuberculosis of the right lung with 3 per cent. of deaths, 63 per cent. amelioration, and 16 per cent. of recoveries.

In the cases in the third group, there were two categories. The first included all non-cavitary patients; all cavernous tubercular cases comprise the second. The first category con-

sists of 109 patients, 64 with left and 45 with right side lesions. Of the 64 left-side cases there were 44 per cent. deaths, 17 per cent. amelioration, and 4 per cent. recoveries. Of the 45 right-side cases 55 per cent. are dead, 6 per cent. were ameliorated, none recovered.

In the cavitary cases there were 323 patients, 205 being left-sided and 118 right-sided lesions. The 205 left-sided cases gave 38 per cent. deaths, 10 per cent. amelioration, and 2 per cent. recoveries. The right-sided cases gave 27 per cent. deaths, 32 per cent. ameliorations, and 6 per cent. recoveries.

The authors conclude from their statistics that a left-sided tuberculosis is more grave than a right-sided one, and requires a more reserved prognosis.—(*Int. Obst. Surg.*)

Clinical Observations on a Series of 172 Cases of Cancer of Esophagus and of the Cardia.

Sarmento reports (*Arch. d. mal. de l'appareil digest.*, Par., 1916, ix, 71), that out of 8,397 patients examined in Mathieu's clinic during the past six years there were 147 cases of esophageal cancer and 25 cases of cancer of the cardia. Only 25 of the 172 cases were in females. The location was distributed as follows:

Esophagus—25 cases in upper third.
Esophagus—73 cases in middle third.
Esophagus—49 cases in lower third.
Cardia—25 cases.

Ganglionic involvement is frequent but extension to other viscera is rare.

Diagnosis can be established by radiology and esophagoscopy. The radioscopic signs deduced from the test-meal examination of 142 cases are: (1) a permanent stoppage of the bismuth varying according to the degree of the obstruction, in the esophagus; (2) a more or less marked dilatation, sometimes rather slight, above the stenosed part; (3) presence of dilatation more or less fusiform not exceeding the width of four fingers followed by a narrow rectilinear or sinuous passage.

Early and progressive dysphagia is the most important and frequent symptom of esophageal cancer. As a general rule the disease is progressive and fatal within a year after the appearance of dysphagia.—(*Int. Abst. Surg.*)

Relation of Renal Function to Prognosis in Tuberculosis.

E. H. Funk, of Philadelphia, in the May number of the *American Review of Tuberculosis*, describes the relation of renal function to prognosis in pulmonary tuberculosis. The phenolsulphonphthalein test of Rountree and Geraghty was used because of its simplicity and general utility in a large series of observations. The ordinary chemical and microscopical urinalysis and a phthalein test were made on admission and at intervals afterward, and in a few cases these observations were followed to autopsy. Twenty-four patients with incipient and one hundred and fourteen with advanced tuberculous lesions in the lungs were selected. Among the former structural changes could not be demonstrated and the eliminative power was apparently normal. Among the latter structural changes were present in a large number and among these the mortality was high. Impairment of renal function was not marked in the average case. Structural changes in the kidney at autopsy were frequently demonstrable. The author confirms the findings of Walsh in the frequency of cases showing acute parenchymatous nephritis, chronic nephritis, amyloid degeneration, cloudy swelling, passive congestion, and hyperemia. His conclusions are as follows:

1. The renal function in incipient pulmonary tuberculosis is good.

2. The renal function in advanced cases of pulmonary tuberculosis is reduced only when there is evidence of structural damage to the kidney. The impairment of function is not such as to be of itself of serious prognostic import.

3. The presence of albumin and casts in the urine with the consequently graver prognosis suggests that the kidney is participating in a generalized destructive process involving the anatomical integrity of the tissues of the body and that in spite of this the functional efficiency is maintained to a fair degree to the last days of life.

4. Death due to renal insufficiency is rare in pulmonary tuberculosis in spite of the frequent structural changes in the kidney in the last six months of life.

5. Our studies with regard to diet have shown no reason why all types of tuberculous patients should not be abundantly fed. However, when evidences of a renal lesion were present and the function at the minimum normal point, or slightly below, we have reduced the protein intake and increased correspondingly the carbohydrates and fats. Certainly protein excesses (as one occasionally sees in the giving of many eggs) should be avoided.

Syphilis

A New Test for Syphilis.

J. E. R. McDonagh, of London, gives the data of a new test for lues. As the ultra-microscope is not likely, at present, to be used on a large scale, owing to the expense of the apparatus and other considerations, he has attempted to evolve a simple test, which would bring out the points revealed by that instrument. If serum is added to glacial acetic acid, the particles increase in size, lose their ions and, consequently, their Brownian movement, and become converted into a state of gelation. Later still, the particles become dissolved in the acid, and fail to give a Tyndall cone. When more glacial acetic acid is added, the particles are thrown out of solution, owing to the further abstraction of water from them. This precipitation can be accelerated by electrolytes. The changes just mentioned are influenced in degree by the number and size of the particles present; therefore, a syphilitic serum can be differentiated from a normal serum by the rapidity with which a precipitate forms. He calls this test the "Gel" test for short, and it is carried out as follows:

From 5-20 c.c. of blood are taken from the vein, and the blood is allowed to clot in order to allow the serum to separate out. It is better not to use a centrifuge, and the serum should not be incubated. An opaque serum or one tinged with haemoglobin may be used. The serum should not be more than a few days old. In order to carry out the test satisfactorily, it is necessary to have both a negative and a positive control, i.e., a known non-syphilitic and a known syphilitic serum, because the time of year and the temperature of the room have an influence upon the reading of the results.

Four c.s. glacial acetic acid are now placed in a clean dry test-tube, to which is added 1.0 c.c. of the serum to be tested. The tube is then shaken.

For every serum to be tested, four test-tubes are taken, i.e., if there are six sera, including the two controls, a rack holding 24 tubes will be required.

One c.c. of glacial acetic acid is first added to each tube. Then into A tube, 2 drops of the acid serum are placed; into B, 4 drops; into C, 6 drops; and into D, 8 drops. The drops should be as small as possible; therefore, a pipette is made out of narrow-bore glass tubing, tapering finely at the end. The pipette contains 8 drops per 0.1 c.c. The same pipette must be used for each series of tests, since the results obtained vary with the size of drop used. After the serum has been added and the tubes shaken, 0.2 c.c. of a saturated solution of lanthanum sulphate in glacial acetic acid is added to each, and the tubes are again shaken. The tubes are then left undisturbed, and the changes noted. In the positive control, a precipitate soon forms in D, then in C, A, and B, or C, B, and A. Half an hour or so later, the precipitate has fallen in all four tubes, leaving a clear solution above in tubes A and D. Later still, the solution becomes clear in the other two tubes.

In the negative control, the precipitate forms slowly, but, in time, it appears in all the tubes, but the supernatant liquid does not become absolutely clear in all four tubes, even if left over till the next day; therefore, it is the easiest thing possible, not only to differentiate a syphilitic from a non-syphilitic serum, but also to tell the grades of positivity, and thereby gauge accurately the effect of treatment. He has tried this test on over 550 sera, controlling the first 200 by the Wassermann reaction, and is more than satisfied with it, and considers the latter superfluous. In the 200 sera, one gave a strong positive and two a slight positive Wassermann reaction, although the patient had never had syphilis. By his test, these three sera were negative. Out of these 200 cases, 37 gave a negative Wassermann reaction, when the test should have been positive. By his test, all sera were positive.

The increase in the number and size of the protein particles, i.e., in cases of primary syphilis, can be detected by this new method more rapidly than by the Wassermann reaction. In the generalization stage of syphilis, a serum in which the particles are very fully laden with electrolytes may give a negative Wassermann reaction; in the recurrent and late stages, a negative Wassermann reaction is frequently obtained, owing to the influence that fatty acids have upon surface tension; finally, normal sera, in which the protein particles have been rendered partly suspensoid, will always give a positive Wassermann reaction. These are disadvantages which can never be foreseen by the observer, and none of them influence the "Gel" test sufficiently to lead to a false reading being made.

The Gel test is influenced by two factors: (1) the number, and (2) the size of the protein particles. A precipitate most readily forms when the protein particles are small and very numerous; hence sera, taken from patients who are being treated by intravenous injections, give the most positive results.

In a few cases of late syphilis, when the change in the particles is an increase in size rather than in number, the formation of a precipitate may take even longer than it does with the control normal serum. Such sera, examined under the ultra-microscope, show no increase in number, but only an increase in the size of some of the protein particles. Summed up, it can be said that a precipitate occurs most rapidly when the protein particles are small and increased in number; then, when they are increased in number as well as in size; then, when they are normal; and finally, when they are increased in size only.

To obtain uniform results, it is advisable to test all sera drawn off on a certain day at the same time. The acid serum should be freshly prepared as well, though those prepared a day or more beforehand can be used, provided fresher sera are not included in the same series. If the same sera are tested day by day, varying results are obtained depending upon the ease or difficulty with which the colloidal particles are robbed of their salts by the glacial acetic acid.

Instead of lanthanum sulphate, either a saturated solution of thorium sulphate or nitrate in glacial acetic acid may be used. The precipitate is formed most rapidly with thorium sulphate, then with thorium nitrate, and finally, with lanthanum sulphate. According to the Hofmeister series, the precipitating power of the sulphate anion in an acid medium is greater than that of the nitrate anion, but the precipitating power of thorium nitrate is greater than that of lanthanum sulphate, for the probable reason that the atomic weight of thorium is greater than that of lanthanum.

If the precipitate forms too quickly, or if the observer is called away before he has read his tests, all that is necessary is to add 0.1 c.c. of a solution containing 10 c.c. of water and 7.5 c.c. of glacial acetic acid to each tube, and to shake them on his return. The precipitation then partly goes back into "solution," but more completely in the case of a negative serum than in the case of a positive serum; therefore, a syphilitic serum can be differentiated from a normal serum by the greater degree of gradient opacity in the four tubes of the former. The difference is particularly clear when thorium nitrate is used.

If 0.2 c.c. of the electrolyte originally used be now added, down comes the precipitate again, in the positive tubes (syphilitic), quickly; in the negative tubes (non-syphilitic), slowly. The difference between a syphilitic and normal serum can, in this way, be judged best when thorium sulphate is used. With thorium nitrate, and still more so with lanthanum sulphate, the secondary precipitation occurs very slowly. There is a difference, too, in the kind of precipitate formed, which should be noted. This reprecipitation can even be repeated more than once, especially with thorium sulphate, but, on the third occasion, it takes some hours to form. The results obtained from this procedure depend upon the amount of the water originally used. The results obtained are largely dependent upon the quality of the glacial acetic acid used, so much so that, with some samples it is not necessary to add an electrolyte in the first instance. In such a case, it is best to take a reading before an electrolyte is used, for it is necessary to add one, before putting in water. When experience with the test has been gained, it will be found only necessary to employ the two and four-drop tubes.—(*The Practitioner*.)

"Newer Ideas Relating to the Subject of Loose Kidney."

(With apologies to R. L. Stevenson.)

I have a little kidney that floats about in me,
And why it has to do so is more than I can see.
It makes me most uncomfortable from heels up to my head,
And keeps me many weary hours reclining on my bed.
I wish that kidney had not felt so strongly called to roam
But, safe within Gerota's pouch, stayed peacefully at home.
And now that it has left its niche it never can return,
(Unlike the usual prodigal) it gives me pain to learn.
They say I'm neuresthenic, and every inside prop
Relaxes and relaxes and lets my organs drop.
It really was the colon that first began to sag
And from its cosy dwelling did my kidney capsule drag.
And now my nice kind surgeon-man is very sure that he
Can put that poor loose kidney in the place it ought to be.
And if he really does so and it stays (He says it will).
I'll have to "pay the piper," and my Dad will pay the bill.

Many physicians say they would volunteer if they could perform their military duties in their own communities. Who would look out for the troops abroad if we all felt like that?

Obstetrics and Gynecology

Gynecological Urology.

H. D. Furniss believes the ureter catheter is of great value, but is too often used. The best cystoscopist is the one who has to use it the least. When the amount of pus coming from a kidney is small, or when we wish to determine the absence of disease of one kidney if the other is diseased, it is of great value. By its use we can detect obstructions, and when this obstruction is due to a calculus not shown by the x-ray, its presence can be made known by the scratches made on a catheter waxed and passed by the stone. The location of shadows suggestive of stone can be determined by making other radiographs after introducing a catheter impervious to the Röntgen rays. A large percentage of women complaining of urinary symptoms have chronic urethritis and with the usual examination these are missed. For these I prefer the Kelly endoscope with the patient in the knee chest posture or the Gerringer endoscope with the patient on the back and the bladder and the urethra distended with water. In uretero-vaginal fistula we may have one or both ureters involved and the ureter may be so injured that all of the urine escapes into the vagina, or a part into that vagina and the rest into the bladder. In other words, a complete solution of continuity of the ureter or an injury involving only a portion of the tube. There are other finer points concerning ureteral fistula that space prevents considering. In diagnosing uretero-vaginal fistula we proceed as follows: Ten s.s. of a 3 per cent. solution of indigo-carmin is injected intravenously, the bladder filled with a boric acid solution. The elimination of the dye is observed through the cystoscope. Failure to see it coming from one side, and finding it in the vagina clinches the diagnosis of uretero-vaginal fistula on the side of the non-appearance. Appearance from both ureters and appearance in the vagina of the deeply stained urine speaks for an incomplete uretero-vaginal fistula. The passage of a ureteral catheter may be obstructed at the point of injury, but not necessarily so.—(*Prov. Med. Jour.*)

Fetal Infection as a Cause of Stillbirth and Sundry Obstetric Theories.

J. B. De Lee of Chicago thinks that intra-uterine fetal infection is a common cause of stillbirths. He gives the case histories and autopsy findings of five cases which substantiate this belief. In the various organs, including the blood of these fetuses, there was found, in one place or another, pathogenic organisms in sufficient number to cause the death of the fetus.

Intra-uterine scarlet fever, typhoid fever and smallpox have been known for years, and, therefore, reasoning by analogy, De Lee believes that any bacteriological disease may be contracted by the fetus *in utero*. The mother may, in many instances, appear to be free from any infection; i. e., the fetus may become diseased independently of its mother.

Intrapartum fever and the so-called "physiological chill" after delivery may well be manifestations of some form of bacterial infection. Whether the intrapartum fever is due to the absorption of poisons, generated by bacteria in the ovum or from the bacteria and their products in the uterine wall or maternal blood, really makes no difference. The effect is the same clinically.

The author says there are three ways by which infection can reach the ovum:

1. By the blood.
2. By contiguity from a neighboring focus; e. g., a pus tube, an appendix, an infected fibroid.
3. By wandering upward through the cervix from the vagina, or by being pushed up in coitus or instrumentation.

Furthermore, eclampsia, impetigo herpeticiformis, abruptio placentae, and acute hemophilia, habitual abortion, nephritis and diabetes, and, perhaps, many other pathological states during pregnancy may be due to infectious organisms or their products.—(*Bull. Lying-In. Hosp., N. Y.*)

Rectal vs. Vaginal Examination in Labor.

Moore thinks the rectal examination is of more value in the following conditions:

1. In conjunction with abdominal palpation in pregnancy and labor, and a vaginal examination in pregnancy for diagnostic purposes in parturition.
2. As an adjunct where the vaginal route is employed in labor, to avoid numerous investigations by the latter method, to note progress of labor and possibly to discover the cause of delayed labor.
3. To get information concerning a gauze sponge left in

the vagina after a perineorrhaphy. The bulging of the sponge is felt in the rectum.

4. To see in the puerperium if the uterus is retrodisplaced; as a guide as to early getting out of bed.

5. Routine rectal examination in pregnancy may discover a rectal carcinoma, pedunculated fibroid of the rectum, uterine tumors, abnormalities, etc. Caesarean section is indicated in rectal carcinoma, as it is harmful to drag a child forcibly past such a tumor.

6. To observe advancement of the head during a pain; to note progress of labor.

7. To note whether the placenta, after detachment, lies in the lower uterine segment or vagina.

8. In delayed labor to note if the spines of the ischium are prominent.

9. After a forceps operation, in suspected cases, to see if the spines of the ischium or coccyx are fractured.

10. In "twilight sleep" the rectal route, usually causing little disturbance of the patient, can be employed to note the progress of the labor.

11. Using rectal examination combined with abdominal palpation in labor, the time for making the primary vaginal examination can be estimated.

12. Sometimes manual flexion of the head in delayed labor can be slightly corrected, thus helping anterior rotation.

3. Nurses understanding rectal examinations can more efficiently watch the progress of labor.

The author's conclusions are as follows:

1. Rectal examination, neither alone nor when combined merely with abdominal palpation in pregnancy and labor, as a substitute for vaginal examination in parturition is not compatible with an intelligent management of childbirth.

2. But the rectal route with abdominal palpation in pregnancy and parturition and the vaginal examination in pregnancy, subject to the rule, "when in doubt * * * resort to the vaginal route," can be used in the majority of labors without necessitating any vaginal examination during labor. Keep out of the vagina in labor except when absolutely necessary to do otherwise.

3. Do a primary vaginal examination in all cases first seen in labor and in all cases of delayed labor, and, of course, where operative interference has been indicated.

4. Use the rectal route as an adjunct to a primary vaginal examination, thus avoiding numerous vaginal examinations, which should always be condemned.

5. Do the vaginal examination before rupture of the membranes, the cervix being dilated, as diagnosed per rectum, and get the benefit of the autogenetic douche of liquor amnii.

6. Rectal examination and abdominal palpation in pregnancy and labor should be more thoroughly taught in medical schools. —(*Am. J. Obst.*, p. 227, 1917.)

Obstetrics as Practiced in the Country.

F. E. Leavitt asked 84 medical men several questions regarding their procedure in obstetrics and the following answers give some enlightening data.

Maternity patients are rarely examined during pregnancy.

The country doctor averages to use the forceps in 15 per cent. of his cases. One physician reports that he delivers 95 per cent. of his women with them. Many bear witness that since pituitary extract came into use, instrumental deliveries have become less frequent.

Only fourteen say they do not operate without skilled assistance.

The use of chloroform and ether is general. Of the two chloroform is the more popular.

Fully one-half of the doctors do not use other narcotics.

In 7,925 confinements there were 211 stillbirths, a rate of 37.5 to the thousand.

Taking those who employed forceps in 50 per cent. or more of their cases, of whom there were five, it is found that 18 stillbirths in 500 deliveries are recorded, a percentage of 3.6. Comparing these figures with those at the other extreme, where forceps were used not to exceed twice in 100 deliveries, it is found that in 600 births only 9 were stillborn, or 1 per cent. Take another perspective. In 3,500 labors where forceps were employed in from 10 to 25 per cent. of the cases, there were 140 stillbirths, or 2.5 per cent.

Pyelitis in Pregnancy and Parturient Women.

Gammeltoft (*Ugesk. f. Læger*, Copenhagen, January 18, 1917) has found in his experience that in its beginning pyelitis among pregnant women may simulate other intra-abdominal diseases. Cases run a very different course which also increases the obscurity of diagnosis. The colon bacillus is the cause of the disease in 70 per cent., and as pregnant women suffer habitually from constipation and often have disturbances of the

gastro-intestinal tract the occurrence of colon bacillus infection is readily explained.

In its acute form the disease may declare itself quickly with general depression and fever and with or without a chill. It is common to observe nausea and vomiting in these cases. The patient may imagine that she is in the first stage of labor because the pains suggest labor pains. Usually after a time pain becomes localized in the kidney region, usually the right, occasionally in both. The ureter and bladder may be the seat of pain and tenderness. In the iliac fossa there may be considerable tenderness while at the symphysis there is very little or none. The urine is turbid and acid reaction. It has a putrid odor suggesting colon bacillus infection and albumin is sometimes present. On examination of the urinary sediment with the microscope usually a clinical diagnosis can be made without a bacteriological examination. In rare cases the urine is apparently normal because on the affected side the ureter has become blocked and only urine from a sound kidney is available for examination. The temperature fluctuates, often rising to 104-105. There are occasionally severe chills. The general condition usually remains good and the pulse is very little disturbed. If the case receives treatment, in about ten days the acute stage passes and the chronic follows.

After the acute stage while the most significant symptoms of the disease may be lacking, the patient will complain of pain in the lumbar region and frequent desire for micturition. With these patients the urine should be examined thoroughly and if necessary cultures should be made. In pregnant patients it may be very difficult to ascertain exactly with what one is dealing. The pain and distress from which these patients suffer very closely resemble that caused by appendicitis. Cystoscopy and catheterization of the ureters will often clear up the diagnosis. In treatment, rest in bed, moist heat over the painful area, and copious drinking of milk, lemonade, boiled water and weak tea are useful. Urotropin has given good results. In using urotropin as much as 50 centigrams every four hours have been administered. Should there be retention of urine it may be necessary to catheterize the ureter at comparatively short intervals. It is best not to inject fluid into the kidney. Considerable help is seen in some cases by posture, turning the patient on the side opposite the infected kidney, when pressure upon the ureter will be relieved and the urine be discharged freely. Rinsing out the bladder is also useful and greatly relieves spasmodic pain. When the patient is convalescing, salol is often useful. An autogenous vaccine is thought to be valuable to prevent recurrence. The bacteria may be present in the urine for a long time after an attack and may change in their potency and development.—(*Am. Jour. Med. Sci.*, July, 1917.)

Gynecologic Operations of Urgency Due to Pregnancy.

Terrades reports the following cases operated upon during pregnancy: 4 cases of ovarian cysts, 2 cases of myoma, 1 suppurative affection of the adnexa, and 4 cases of disease of the external genitalia. (*Arch. de gynec., obst. y pediat.*, 1917, xxx, 47.)

In the first group the duration of the pregnancies varied from two to three months. All went regularly to term without complication.

In the second group the patients were respectively two and three months pregnant. One aborted and the other went to term.

In the third group the patient was three months pregnant and aborted twelve days after operation.

In the fourth group the pregnancy duration varied from two to five months. Three of the four patients went to term without complications and one aborted.—(*S. G. O.*)

The Conservative Treatment of Eclampsia.

R. McPherson believes in the rotunda treatment in this condition. In 35 cases he had a maternal mortality of only 8.6 per cent. and a fetal mortality of 40 per cent.

The rotunda treatment is as follows:

Upon admission the patient is catheterized, the blood-pressure taken, and put in a dark room. Morphine sulphate, gr. 0.5, by hypodermic is given, followed by stomach lavage and two ounces of castor oil poured down the stomach tube. Colonic irrigation of five gallons of five per cent. glucose solution is given. If the blood-pressure is 175 systolic, phlebotomy is done and a sufficient amount of blood extracted to bring the pressure down to 150 systolic. The patient is then kept quiet and one-fourth grain of morphine is given every hour until the respirations drop to eight per minute. At this time the convulsions have usually ceased, labor will have started, and, as has happened in practically all of the author's cases, the patient will deliver herself in a short time.—(*Bull. N. Y. Lying In Hosp.*, p. 48, 1917.)

War Medicine and Surgery

Infiltration Anaesthesia.

H. H. Schmidt, writing from a German field hospital, recommends (*Muench. med. Woch.*, November 21, 1916) infiltration anesthesia in certain cases where it is necessary to operate shortly after the receipt of the wound. He advises paravertebral anesthesia by injection into the nerves as they issue from the spinal cord for operations on the trunk or on the throat, and parasacral anesthesia in operations on the pelvis and on the lower extremities; nerve anesthesia is useful for peripheral parts of the limbs, and also in the form of plexus anesthesia—that is, the injection into the plexuses of nerves supplying the upper or lower extremities. Nerves coming off the spinal cord are to be met with, approximately, in one line which runs from a point 2 cm. from the middle of the neck to a point 3 cm. from the spinous process of the fifth lumbar vertebra. The depth at which the nerve is reached by the point of the needle varies from above downward. The nerve is generally situated from 1 to 1½ cm. in front of the bone when it is touched with the needle. If the anesthetic is merely brought into the neighborhood of the nerve, it diffuses into the nerve in ten or fifteen minutes; 5 c.cm. of a 1 per cent. solution of novocain-suprarenin, freshly made in physiological salt solution, was found to be sufficient for one nerve, but 200 c.cm. could be used without harm, and produced anesthesia lasting from one and a half to two hours.

Anaesthesia was produced about a quarter of an hour after injection. In order to ensure complete paravertebral anesthesia, 0.01 to 0.02 gram of morphin, or 0.0002 to 0.0004 gram of scopolamin, was injected half an hour or an hour before the injection of the novocain-suprarenin. The point of injection for the sacral nerves was 2 cm. from the middle line on each side of the coccyx. The second, third, and fourth sacral nerves are found by running the finger along the interior of the rectum, while the sacrum is palpated by the point of the needle. Sacral anesthesia was used for amputations of the upper part of thigh and operations on the lower part of the abdomen; 50 to 70 c.cm. of a 1½ per cent. solution of novocain-suprarenin are injected into the spinal canal at the sacrum. This was less frequently employed in field hospital work than paravertebral anesthesia, as unsatisfactory results were more frequent from it, and because it took longer to produce anesthesia—twenty to twenty-five minutes. For operations below the middle of the upper leg the usual peripheral infiltration method of anesthesia was employed with success; 20 c.cm. of a 1½ per cent. solution was injected into the great sciatic nerve, 10 c.cm. into the anterior crural and the obturator nerves. Generally speaking, for operations below the knee-joint only the great sciatic and anterior crural nerves were injected.—(*Brit. Med. Jour.*, February 17, 1917.)

Cancer Problem and the World War.

In discussing this subject, Bainbridge draws the following deductions:

Ætiology.—(1) None of the investigations, of either a purely experimental or of a strictly clinical character, have revealed anything concerning the cause of cancer which need give rise to a radical change in the generally accepted views with regard to the treatment of the disease.

(2) The laboratory investigations with regard to heredity should be continued, but it is deplorable that, at this stage of knowledge, this possible factor in ætiology should be brought to bear in the effort to control cancer in the human subject. The advocacy, on the basis of these findings, of the "eugenic control of matings," has already given rise to vastly more mental suffering than is at all warranted by the facts at hand.

(3) Whatever part soil, diet and other allied factors may play in the cause of cancer, the findings, as published, do not warrant the application of deductions therefrom to the "diet plus régime" method of treating cancer, if this is to exclude the early and radical removal, by surgical means, of the cancer.

(4) The findings with reference to the causative effect of prolonged irritation reinforce the view that it is important, wherever possible, to eliminate this factor by rational means.

Early Diagnosis.—The clinician has been given no reliable aid to diagnosis, in the early stages of cancer, by the continued researches with regard to the various "tests" or "reactions."

Prevention.—The education of the medical profession with reference to the earlier and more accurate diagnosis of precancerous and early malignant lesions, of the layman with regard to the avoidance of the sources of chronic irritation and other factors which may be conducive to the development

of this disease, together with a hearty co-operation between physician and layman, are emphasized by continued investigation. No definite means of preventing cancer has been developed.

Treatment.—Nothing has been developed which, in any sense, detracts from the rôle of surgery in the treatment of cancer. Diet, hygienic régime, and all adjuvant measures, should be given their proper place as aids, merely, and, in no sense, as substitutes for surgical intervention.—(*The Practitioner*, No. 3, 1917.)

The Treatment of War Neuroses.

Mann surveys the progress made during the war in the treatment of war neuroses. He began conservatively, prescribing rest, a full diet, hydrotherapy and electrotherapy and sedatives. The results were not encouraging. The purely neurosthenic manifestations had often reacted so satisfactorily that after weeks or months in hospital the patients were able to return to duty. But well defined psychogenic or hysterical phenomena, manifested in paralysis, contracture, cramp, astasia, tremor, and so on, were scarcely benefited by these conservative measures. Narcotics, such as hyoscin, morphin, opium, chloral and bromides, were practically useless. Wilmanns found that, under such conservative treatment, only 5 per cent. again became fit for active service, whereas 64 per cent. had to be discharged from the army. Subsequent investigations had shown that of these discharged patients 75 per cent. were either just as ill or worse than before. Mann and others had been equally unsuccessful.

Turning to the treatment by hypnosis, he quoted the startling results claimed by Nonne of Hamburg, who alleged that 65.4 per cent. of patients suffering from "gross hysteria" were cured or relieved of their symptoms, and that of these 29.5 per cent. had been cured in one sitting. Nonne's claims had subsequently been reduced to cures in 50 per cent., but even this was a brilliant result. Nonne was convinced also that his results could be permanent, for some of his patients had endured the fighting about Verdun and the Somme for months without a relapse. Yet Mann found this treatment applicable only in a few cases. Its effectiveness depends largely on the personality of the physician, and few patients and still fewer physicians were qualified to undergo or practice it. Mann endorses Kaufmann's method of combined suggestion and severe electrical shocks with a few reservations. He referred to the cruelty of the torture inflicted, and admitted that there had already been two deaths under this treatment. In both cases an enlarged thymus had been found at the necropsy. He thought, however, that death could be avoided by better technique, notably by the use of the faradic current only.—(*Berl. klin. Woch.*, December 11th, 1916.)

The Selection of an Antiseptic.

Philipowicz (*Wien. klin. Woch.*, October 26, 1916) speaks well of the use of hyperol in suppuration due to anaerobic organisms, and for the prevention of gas gangrene. It is a compound of hydrogen peroxide and urea, rendered stable by the addition of a trace of citric acid. When small pads of gauze containing hyperol powder are put into a wound cavity oxygen is slowly liberated. Uninjured tissues are not attacked, and the patient seldom complains of pain. Considerable leucocytosis occurs, and the growth of aerobic organisms is stimulated. If pus formed, free drainage was found to be necessary. In cases in which there was necrosis of tissue with little pus formation, balsam of Peru was used to promote local leucocytosis. Oxidizing agents also were found useful in the treatment of bone cavities and to stimulate growth of granulations. Tincture of iodine was used for routine skin disinfection in all simple wounds, the wound being first cleaned by washing with benzine. In hernia of the brain, which is assumed to be a symptom of encephalitis, tincture of iodine was particularly useful on account of its antiseptic and drying properties. To promote separation of the devitalized portions of the brain Scheide painted the protruding part energetically with tincture of iodine at each change of dressing, and of 250 cases so treated all did well. In abscess of the brain, or foul penetrating wounds, he irrigated the brain with very hot water, and either injected tincture of iodine or inserted gauze drains soaked in the tincture. To prevent the spread of infection from the skin or from infected parts of the brain, gauze soaked in tincture of iodine was laid around the protruding part.

Philipowicz treated frost-bite of the third degree and other forms of incipient gangrene, such as bedsores, by tincture of iodine and dermatol; the interdigital folds were painted with iodine and the dermatol shaken on. Small pads of gauze saturated with iodoform were placed between the digits and the

whole affected part covered with one fold of gauze. For shallow cavities hot potassium permanganate solution was found useful. In wounds infected with *B. pyocyaneus* mercuric oxide solution, 1 in 1,000, was found very useful. A solution of camphor 60 parts, liquid carbolic acid 30 parts, absolute alcohol 5 parts, was used with success in suppurating affections of joints after tapping, and it was found that the injection might be repeated in a few days; iodoform emulsion was also useful for the same purpose, and the two preparations might be used alternatively. Alcohol was used for personal disinfection before operating, and corrosive sublimate for cleansing rubber gloves during an operation.—(*Brit. Med. Jour.*, April 7, 1917.)

The Conservation of Milk.

The prevention of waste would go far to solve the food problem at the present time, and one of the most promising ways of doing this is by preserving perishable foods. Liquid foods are specially liable to loss and contamination, and should therefore be desiccated. Methods which in the past have been found wasteful may well now prove to be economical in view of shortage and advanced prices. We shall soon arrive at the period of the year when the maximum output of milk is reached, and the waste of this valuable fluid food material is notorious. Its preservation by concentration with the addition of sugar is already severely handicapped by the shortage of the preservative itself, besides which the milk-syrup so produced is not ideal for general food purposes. Milk, of course, can be concentrated without the addition of sugar, but the product cannot be said to be satisfactory, as it is very liable to chemical changes, involving, for example, the precipitation of its milk-sugar and of the calcium salts, chiefly in the form of citrate. The desiccation needs to be carried a step further and the whole of the water removed.

There are two difficulties about the complete drying of milk. The first is that if too high a temperature is employed the constitution of the milk is seriously disturbed; the albumins are coagulated, enzymes are destroyed, the fat is separated, and the resulting powder does not re-form an emulsion with anything like the appearance and character of milk. Nevertheless, the product thus obtained possesses a high nutritive value and would save much waste of useful food, particularly in the summer. The water can, however, be easily withdrawn from milk by another process, which consists first in concentrating the fluid at a low temperature in a vacuum pan and then forcing the concentrated milk through a spray producer into a capacious chamber through which flows a current of warmed air. The moisture is thus carried away and a fine dry powder falls, which may be swept out. This product amalgamates perfectly with water, the fluid tasting like fresh milk and having exactly the appearance of the natural emulsion. Moreover, it still shows enzymic activity, the albumins are uncoagulated, the fat is not separated, and caseinogen is still present in unaltered form.

By whatever process dried milk powders are made one great trouble arises: sooner or later the fat deteriorates, becoming partially rancid, and giving the product a repulsive flavor and smell. Even skim milk, retaining as it invariably does a small proportion of fat, deteriorates in the same way sufficiently to make it distasteful after a time. If this problem could be solved there would be no longer any reason for employing fluid milk at all and an enormous economy of valuable food material would be gained. We could then, so to speak, keep the cow in the larder to be drawn upon exactly as domestic necessity arises. The resulting revolution in the supply and distribution of milk would bring substantial gain to the community on many counts.—(*Lancet*, April 7, 1917.)

Abdominal Surgery at an "Advanced Operating Center."

Cpts. Gerald S. Hughes and W. A. Rees, R. A. M. C., report that out of the 640 cases of severe injuries to the abdomen, head or chest received at this advanced operating station in six months, 263 of them were wounds of the abdomen.

The hospital is stationed close up to the line and is thoroughly equipped for dealing with urgent surgical work. The wounded are nursed by sisters with a staff of orderlies, and the permanent officers are a surgical specialist, an assistant, and an anesthetist, constituting "a team." The time elapsing between the receiving of the wound and the admission to hospital depends on the time taken in getting the patient back to the advanced dressing station, from which he is sent direct to them. It is generally longer during an attack than in times of quiet.

As soon as the patients arrive they are taken to a receiving ward and placed in beds always kept ready warmed, where

they are examined, the findings noted down, and the position of the wounds marked on diagram. These notes are subsequently transcribed into the Special Abdominal Book and have added to them later the notes received from the base and from the home hospitals. Thus a complete history of the case is kept from the receipt of the wound until the time the man is finally discharged.

The patients remain in the receiving ward until they are taken to the theatre for operation, or, in those cases where an operation is definitely contra-indicated, to the wards. It is an important point in a hospital at the front not to send abdominal cases into the general ward for observation, as if this is done in a rush there is a danger of these cases being overlooked, and for the same reason patients in a seemingly moribund condition are not removed from the receiving ward, so that if their condition at any time improves they can immediately be sent to the theatre.

In dealing with abdominal cases the first question to be decided is whether the wound is penetrating or non-penetrating—that is to say, whether the missile has entered the peritoneal cavity causing visceral injury, or whether it is a "contour wound" involving only the abdominal wall. To help one to decide this question and in examining every patient with an abdominal wound the following points must be considered:

Facies, pain, the pulse, vomiting, abdominal rigidity, tenderness, hemorrhage, liver dullness, position of wound of entry.

A large incision is made nearly from ensiform cartilage to pubes. A central opening is preferable to one through the pararectal line, even when the damage is on the flank, for one gets less bleeding in the parietes, also a better opening is produced for examination of the interior and the surgeon can commence with a less anaesthesia and before a complete relaxation of the muscles is attained. If later in the operation there is any difficulty in dealing with such parts as the spleen or colic flexures, a transverse incision into the flank may be made, and it is surprising to note how well and firmly this subsequently heals.

Blood is present in the peritoneal cavity in almost every case, but this may be disregarded and a routine examination made at once, first of the small intestine commencing from the caecum, then of the large intestine commencing from the same place, followed by an overhauling of the stomach, liver, spleen and kidneys. The damage, as met with, is repaired. Wounds in the intestine are sewn if possible rather than a resection done. We have learned by experience that the mesentery may be separated from the gut for a distance of 2 or 3 inches without the blood-supply of the bowel being impaired.

Quickness and gentleness are the essentials of the treatment of abdominal injuries. In sewing up, through-and-through salmon-gut sutures are first placed in position and the peritoneum is closed with a catgut stitch. In cases where the peritoneum does not come together easily, especially above the umbilicus, we bring it together with catgut passed through the peritoneum and rectal sheath. The salmon-gut sutures are then tied. Time must not be lost in elaborate closing of the belly wall. As a rule, it heals soundly and cleanly. In three cases a part of the abdominal wall gaped open about the tenth day and had to be restitched, but no ill resulted, and the patients made good recovery.

Saline is given intravenously on the table, if necessary, but not as a routine, as we have thought that bronchial secretion was increased by this measure.

When the patient is sent back to the ward he is placed for 8 or 12 hours with the foot of the bed well raised. Subsequently he is made to assume Fowler's position. During the first few hours after operation every endeavor must be made to combat shock and to keep up an adequate blood pressure in the circulation. To this end we employ subcutaneous or rectal saline injections, pituitary extract, and the judicious use of morphia. For the same reason it is not wise to restrict for too long the giving of nourishment by the mouth.

Thirst is always a distressing symptom, and frequent small drinks of water, albumin water, peptonised milk or weak beef-tea are allowed from the commencement. Occasionally, due to atony, the stomach becomes overdistended, and this is shown by frequent small bile-stained vomits. Lavage of the stomach is then resorted to, generally with great relief to the patient.

The nearer the front the operating centre is situated, and the earlier the cases are brought to it, the higher will be the mortality owing to more patients arriving alive who would have succumbed if they had been transported farther back. At the same time, one hopes that more lives are saved. Statistics of necessity must be somewhat fallacious, as the majority of patients have multiple wounds involving other parts of the body besides the abdomen.

The results of six months' work give the following figures:

Total number admitted with abdominal wounds, 263.

Recovered, 136 = 51 per cent. Died, 127 = 49 per cent.

Total number admitted "with penetration," 180.

Total number on whom a laparotomy was performed, 110.

Recovered, 46 = 41.5 per cent. Died, 64 = 58.5 per cent.

Laparotomies performed where wounds of solid viscera only were found, 21.

Recovered, 13 = 62 per cent. Died, 8 = 38 per cent.

Laparotomies performed for injuries to hollow viscera only, 62.

Recovered, 22 = 35.5 per cent. Died, 40 = 64.5 per cent.

The following analysis gives the relative frequency that the different organs were wounded in our series of laparotomies: Stomach, 14; small intestine, 60; large bowel, 40; rectum, 3; liver, 24; spleen, 11; kidney, 14; bladder, 3.—(*Lancet*, April 28.)

Primary Wound Suture.

Col. C. G. Watson, who has had a broad experience in France as a British army surgeon, observes that within the last six months a far wider field of wound suture has been opened up by the method which he describes, and which, in his opinion, may considerably modify future views on the treatment of wounds. This method includes the use of Morison's bismuth and iodoform paste—"B. I. P."—which consists of bismuth subnitrate, one part by weight; iodoform, two parts, and liquid paraffin sufficient to make a paste. Watson believes that if the technique advised by Morison is carefully followed, the Carrel method of wound flushing can be dispensed with in many cases. He states that the method seems to be well suited to recent wounds, though in these the amount of paste used should be limited owing to the risk of iodoform poisoning. Morison's initial work was carried out on wounds that reached him seven to fourteen days after infliction. Briefly, the method is to open up the wound thoroughly and remove with the knife all damaged tissues; the entire wound surface is dried with spirit and thoroughly smeared with paste; the wound is then filled with paste and closed by suture without drainage. Very severe wounds should not, at any rate in the early stages, undergo the extensive operative treatment required by this method. Watson thinks that the field for primary suture can be considerably extended with safety by using "B. I. P.," whereby much economy will result, not only in time taken up by surgeons and nurses in dressings, but also in the length of time required to effect a cure. Usually there is a moderate though transitory initial rise of temperature, and for the first few days there may be some redness of the skin edges, but pain disappears as if by magic almost at once. There is no need to dress the wound so long as the patient is comfortable. Wounds, though discharging serum freely through the sutures, may be left untouched for weeks at a time, except as regards the outer dressings, without delaying progress. When the wounds are dressed for the first time the dressings slip off without pain.—(*St. Bartholomew's Hospital Journal*), April, 1917.)

Hypothermy As An Epileptic Equivalent.

Carnot and de Kerdrel record a curious case coming under their observation at one of the neurological centres organized by the medical staff of the French Army:

The patient, a sergeant, aged 24, was wounded Sept. 16, 1915, by a bullet which struck his forehead above the left eyebrow. Two hours later he was trephined. He was unconscious for 15 days, and on recovering his senses he was completely paralyzed on the right side, but able to speak. The hemiplegia gradually disappeared in a month. Seven months after the injury the patient had a fit of Jacksonian epilepsy, beginning in the right arm and becoming generalized.

Twenty-seven days later he had a second attack, beginning in the fingers of the right hand, and following the usual course up the arm and down the trunk and right leg. He had a pulsating depression two finger breadths above the outer end of the left eyebrow, pressure on which, however slight, produced an unpleasant feeling of malaise and painful radiating sensations referred to the right arm. There was slight general weakness of the right arm and slight diminution in sensibility in the same distribution. The rectal temperature was normal. A few days later a remarkable lowering of the temperature took place in progressively from 98° F. down, in three days, to 94° F., rising again almost to normal in some 24 hours. Two days later another Jacksonian fit occurred of the same kind as before. On this occasion, however, repeated slight attacks also took place involving the right arm only, followed by paresis of the arm. The contractions in the arm were very painful. Five or six days later the temperature began to fall, and went down to 93.5° F., again gradually rising; a brief attack occurred at that time, influenced, no doubt, by bromide treatment. This

treatment also was responsible for the curtailing of a third phase of hypothermy and painful tingling in the right arm, without twitching, which developed some 14 days later. The patient's wound was reopened and the cicatrix was found to be adherent to the underlying gyri. It was freed, and thereafter the attacks of Jacksonian epilepsy and the hypothermy both ceased.—(*Paris Medical*, May 12, 1917.)

War Wounds of the Larynx and Trachea.

Military statistics show that laryngotracheal injuries are not frequent. In the present war only an approximate percentage has been established. Wounds of the neck may be taken as about 3 per cent. of the total wounds. In an experience with several thousand wounded Moure and Conuyt (*Rev. de chir.*, 1916, xxxv, 11 *sem.*, 1.) have found only about 30 wounds of the larynx and trachea.

They class laryngotracheal injuries as (1) neuropathic disturbances, (2) extrinsic or extralaryngeal lesions, and (3) lesions of the laryngotracheal region.

In the second category the authors give some clinical examples of nerve and muscle lesions and lesions involving the oesophagus. In the third category are lesions of the laryngeal region (cartilage, muscles, articulations, and ligaments), of the cricoid, epiglottis, and trachea.

The immediate results of laryngotracheal injuries are hæmorrhage, emphysema, asphyxia, and sudden death. In the great majority of cases of penetrating wounds, of the laryngotracheal tract, the respiration was compromised to such an extent that tracheotomy was necessary to save the life of the patient. Besides this preliminary preventive tracheotomy, the wound, as is the common practice in all war injuries, must be opened up and cleaned and foreign bodies, etc., removed. These procedures of tracheotomy and cleansing constitute the immediate treatment of such injuries.

The results consecutive to laryngotracheal injuries are classed by the authors as: (1) œdema of the laryngeal mucosa; (2) suppurations; (3) inflammatory stenoses; (4) paralyses. Such results may necessitate a second tracheotomy. This should be systematically performed. Inter-cricothyroid laryngotomy ought never be done, according to the opinion of the authors.

A large portion of the authors' extensive article is devoted to a detailed study of laryngotracheal cicatricial stenoses, including (1) circular or membranous stenoses; (2) tubular stenoses; (3) complications, perichondritis, etc.; and the treatment by tracheolaryngostomy including their special technique.

Only when the surgeon is quite assured that cicatricial retraction has terminated and that laryngotracheal permeability is perfect should any plastic procedures be attempted.

The authors describe the detailed technique of Moure's special laryngotracheal autoplasty. This consists in making two cutaneous flaps around the laryngotracheal opening which superimpose on each other so as to form a double layer over the opening.

In concluding the authors state that the cicatricial laryngeal stenoses of war are quite different from those observed in peace and the prognosis is much more serious.—(*S. G. O.*)

Simulation of Skin Disease by Soldiers.

At a meeting of the Riunioni Medico-militari Castrensi R. Rivalta read a communication giving particulars of 100 cases of what he calls "cutaneous pantomimicry" which had come under his notice from November, 1915, to October, 1916. In 43 cases the artificial lesions were eschars and sores, in 20 eczematoid dermatoses, in 20 suppurating and phlegmonous, in 9 bullous dermatitis, in 8 hard traumatic œdema. The number would have been still greater had the cases in which there was a suspicion of simulation which could not be verified been included. To these must be added some which were not recognized. In all the cases reported the lesions were produced by the external application of a chemical irritant, or less frequently heat, or by direct injury. The seat of election of the eschars and sores, which constituted about one-half of the total, was the lower limbs, especially the feet. Eczematoid dermatitis was most often seen on exposed surfaces, such as the cheeks and the concha of the ear; the lesions varied from scarcely perceptible abortive forms to the most acute processes with great œdema of the whole face, closing the eyes and giving the patient an appearance "at once monstrous and comic." The phlegmonous lesions were situated almost exclusively on the lower limbs, most frequently the left; repeated applications of the irritant generally caused multiple foci of inflammation in different stages on the same limb, the process going beyond the intention of the malingerer, who was frightened at the self-inflicted damage to his tissues.

The bullous lesions were situated on the feet, and were always said to have been caused by scalding with boiling

water; it was difficult to determine whether they were accidental or artificial. The lesions produced by boiling liquids are generally multiple phlyctenulae or bullae with a thin pellicle; they contain a fluid serous transudate, and have polycyclic outlines. On the other hand, those caused by blistering fluids are mostly bullae few in number with a thick pellicle adhering to the contents which are almost gelatinous; their outline is generally an unbroken curve of large radius. The hard traumatic oedema is most frequently seen on the back of the hands, especially the left; there were never any signs of contusion (echymosis, etc.), and the lesions had sharp outlines, especially at the roots of the fingers; they were of hard elastic consistence and not very painful. They were produced by repeated injuries mitigated by the interposition of pieces of cloth; sometimes they were caused by irritant liquids. Edema of the feet accompanying the first stage of frost-bite was doubtless in many cases due to constriction by tight drawers, garters, and puttees, but it was impossible to determine whether such constriction was deliberately caused in order to produce swelling of the limb or was brought about accidentally by wetness of the garments. The diagnosis of the artificial character of a skin affection generally amounts only to medical conviction, not to legal proof. In five cases, however, the author identified the agents employed; in two cases the discovery was confirmed by the confession of the simulators that they had used pieces of the root of a sort of leek common in Sicily.—(*Brit. Med. Jour.*, April 7, 1917.)

War Surgery of the Abdomen.

Col. Cuthbert Wallace found the kidney was wounded 73 times out of 965 peritoneal operations. In two cases both kidneys were injured and both were fatal.

The spleen, liver, and colon are the organs most frequently associated, and, the spleen and right kidney have been wounded without other injury than perforation of the vertebra, which in this case was unaccompanied by paraplegia. The case was fatal from a late recurring hemorrhage in the spleen. The right kidney is commonly associated with injuries of the liver and hepatic flexure and the left with injuries of the splenic flexure and spleen.

The nature of the projectile has no particular effect on the injury, and, as is the case with other solid organs, the kidney is liable to extensive rupture. The actual lesions may be perforations, scores, furrows, avulsion of poles, and hemisection; sometimes the kidney is found lying loose, the pedicle having been ruptured. Sometimes the pelvis is alone perforated; sometimes the vessels are completely divided, the ureter remaining intact. The amount of hemorrhage depends largely upon whether a vessel has been injured or not; there is very often considerable perinephric hæmatoma. In contra-distinction to civil injuries intraperitoneal hemorrhage is very frequent.

The shock is not, as a rule, very great and depends largely on the amount of blood lost; and this, perhaps, is peculiar when one remembers the effect produced by the kidney blow in boxing. The dullness due to free fluid in the abdomen is more common than in civil injuries and manifests itself in the right or left side according to the organ injured. *Hæmaturia* is usually present, but it may not occur at once. The absence of this sign is due either to suppression, to the presence of clots or to pieces of kidney in the ureter. Profuse hemorrhage into the bladder is not common in the early stages. *Hæmaturia* usually clears up in a few days, but may persist. *Extravasation of urine* is not marked unless the pelvis has alone been injured.

A secondary hemorrhage is a fairly frequent late complication, and occurs apparently most frequently during the second and third week after injury. The urine is generally contaminated. Sometimes the secondary hemorrhage starts afresh, or it may manifest itself as an exacerbation of a persistent primary hemorrhage. Unlike primary hemorrhage, it is often accompanied with clotting of the blood in the bladder. Gas infection from an effusion of blood round the organ has been met with.

Many cases require no operative treatment. Sometimes it is advisable to open up the loin wound. Many cases of kidney injury are found after an exploratory celiotomy complicating other visceral injuries. If the kidney is found to be not much damaged all that is necessary is a puncture drained into the loin; if much damaged nephrectomy may be necessary.

The hemorrhage from wounded kidney vessels is very liable to restart with alarming rapidity directly the clots are disturbed; and it is rather interesting here to mention that the number of kidney wounds treated seems to be larger at an advanced operating center than in the casualty clearing station. This is most probably due to the fact that the cases arriving earlier have not suffered so much from hemorrhage. The treatment of secondary hemorrhage is ablation of the organ, care being taken at the same time that the bladder is empty of clots.

—(*Lancet*, April 28, 1917.)

Chestnuts and Acorns in War Service.

The manufacture of modern munitions has so far implied a certain demand on cereals which otherwise could be used for food. This is an unfortunate diversion, and it is gratifying to learn that, instead of using cereals, other materials not so far made fit for human food, as, for example, the common horse chestnut, are to be employed. We may point out similar possibilities in regard to the acorn, vast quantities of which are wasted every year. The composition of these nuts has something in common, as will be seen from the following figures: Horse chestnut: water, 38.9 per cent.; protein, 4.8 per cent.; fat, 4.6 per cent.; carbohydrate, 50 per cent. Acorn: water, 6.3 per cent.; protein, 5.2 per cent.; fat, 4.3 per cent.; carbohydrate, 45 per cent. The most important constituent of both is the carbohydrate, in the form of starch, while the acorn should have further value on account of the substantial proportion of fat which it contains. Neither nut has as yet been used to any extent for human consumption, and it is possible that their utilization in some way or other, whether for food purposes or not, may be one of the results of the relative food shortage. The first step has now been taken in the substitution of these nuts for cereals in the production of munition agents. Other abundant vegetable products may also be pressed into service. It is, of course, possible to convert wood, linen, cotton and the like into sugar, but the process of conversion does not yet appear to have attained practical dimensions or to have reached an economic stage.—(*Lancet*, June 16, 1917.)

Another Spirochaetal Disease.

Early in 1916 a febrile disorder was described by Werner and Haenseler occurring on the German Eastern front, and named five-day fever or febris quintana, and by later observers febris wolhynica. In the summer of 1916 a number of similar cases occurring on the Western front were known as Meuse fever. Dr. W. Thörner in the *Munch. med. Woch.* Dec. 12, gives an account of the disease. The characteristic symptoms are: Sudden elevation of temperature without rigor, and defervescence without sweating; acute pain in the legs often requiring morphia, but without definite evidence of periostitis; an enlarged spleen sensitive to pressure; heart, lungs, digestion, and urine normal; polynuclear leucocytosis up to 20,000. The German observers have devoted much attention to discovering the exciting cause of the fever. Werner thought he saw on one occasion a spirochete rather longer than the diameter of a red cell. Korbach saw dancing cells and a suggestion of moving filaments amongst them. Töpfer observed short rods. Professor Riemer, who summarises these observations in the *Munch. med. Woch.*, Jan. 16, has now found spirochetes very scanty in direct films, but fairly abundant after anaerobic culture for a week in blood serum. He gives micro-photographs showing an organism scarcely longer than the diameter of a red blood cell, with four turns, exceedingly mobile and difficult to see unstained, but readily taking up any anilin dye and decolorizing with Gram. Some of the spirochetes were longer, with a middle piece between the turns as though two spirals were intertwined. Attempts to infect guinea-pigs with the organism were unsuccessful, and Professor Riemer is too cautious to assert that he has discovered the causal agent of the disease, although he believes that he has done so. The analogy with relapsing fever is evident. If his observations are confirmed, trench fever must be added to the rapidly growing list of spirochaetal diseases. Dr. Galli Valerio, of the Lausanne Hygienic Institute, has recently enumerated them as syphilis (*S. pallida*), yaws (*S. pertenue*), relapsing fever (*S. obermeieri* and others), Weil's disease (*S. icterohemorrhagiae*), bronchitis of Castellani (*S. bronchialis*), angina of Plaut-Vincent (*S. vincenti*), pyorrhea alveolaris (*S. dentium* and others), and various spirochetes associated with local venereal ulcerations. On all counts spirochetosis is a subject of growing importance.—(*Lancet*, March 3.)

Bacteriological and Experimental Researches on Gas Gangrene.

Weinberg describes two types of gas infection. In the first the extensive gaseous infiltration with gangrene is the outstanding feature. In the second the local findings are usually slight while the patient is very toxic—apparently overwhelmed with the toxins from the gas-producing organisms.

The chief organisms responsible for the occurrence of gas gangrene are: *bacillus perfringens* (the bacillus of Welch), *vibrio septique* and *bacillus oedematiens*. These were found singly or in groups.

The treatment consists of (1) wide incision or amputation, (2) administration of sera prepared from the three organisms mentioned above. There have been some very encouraging results from the use of the sera.—(*Proc. Roy. Soc. Med.*, 1916, ix, 119.)

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Typhoid Epidemic.

J. G. Cumming, Berkeley, Calif., reports a typhoid epidemic involving twenty-three persons at Helm, Calif., in May, 1916, caused by infected ice cream. There were three deaths. The investigations by the California State Board of Health traced it back to a chocolate flavored ice cream made by one of the parties at a country school picnic, which source was identified by the laboratory examination. The maker had had typhoid fever seventeen years before. The California State Board of Health keeps in touch with all known typhoid carriers not only for the public safety but also for the solution of the carrier problem, and requires an agreement to the use of proper precautions on the carrier's part. The history of the case demonstrates the inefficacy, from the standpoint of community health, of treating a case of typhoid without seeking the source of the infection.—(J. A. M. A.)

Typhus Fever.

P. K. Olitsky, B. S. Denzer and C. E. Husk, New York, after reviewing the work that has been done in regard to the body lice infection of typhus, give an account of their own experimental work in producing typhus fever in guinea-pigs by the intraperitoneal injection of infected lice, and studying it bacteriologically. They ground up lice, feeding on typhus fever patients, in a sterile mortar with about 4 c.c. of saline solution, making a homogeneous suspension which was injected into guinea-pigs. After bleeding the animals, their defibrinated blood was injected into other guinea-pigs. The unsettled political conditions, however, interrupted the work so that the transmission of the virus could not be followed up completely to its termination. The necropsy on the original guinea-pig, however, showed the typical lesions of typhus fever and emulsions made from the spleen of the animal and cultivated anaerobically gave, on culture, typical colonies of the typhus bacillus. The guinea-pig injected similarly with a like emulsion from lice taken from a subject of Brill's disease in New York showed no such reactions. In this case, they consider the evidence conclusive, however, that typhus fever can be transmitted to guinea-pigs by injection of typhus-infected lice and the typhus bacillus has been recovered from the spleen of the reacting animal. They emphasize the point that contamination of such cultures did not occur as might have been expected.

When the intestinal contents of typhus-infected lice virulent from guinea-pigs were cultivated, pure cultures from the typhus bacillus often resulted. They notice the claims of da Rocha-Lima as to the specific distinctness of the bacillus obtained by him from typhus patients, and as evidence of this, his offering the variability of the gram-stained reaction in the organism described by him. They find that both gram-positive and gram-negative organisms have been often met with in the original colonies, as shown in their own experience and from those of Plotz and Baehr, and the constancy of a positive or negative-gram stain is not important. One factor should be noted, however, the relationship between the decolorization by Gram's method and the virulence of the organism. In conclusion, they say: "Since 1910, many observers in different parts of the world have reported the finding of an organism in typhus-infected lice. This organism they believe to have a casual relationship to typhus fever. Owing to the fact that improper methods have been used, culture of this organism was impossible. In Mexico, we have been able to grow this bacterium and to show that morphologically, culturally and serologically it is identical with the *Bacillus typhi-exanthematici*."—(J. A. M. A.)

Keratodermie Blennorrhagique.

F. E. Simpson and B. B. Beeson, Chicago, after a brief summary of the literature report two cases of gonorrheal keratodermie. The most striking pathological features of keratodermie blennorrhagique, they say, may be summarized as follows: "1. Marked edema resulting in vesiculation and later pustule formation. 2. Infiltration of leukocytes in both derma and epidermis. 3. Parakeratosis associated with hyperkeratosis, resulting in the formation of the horny cap on each lesion." The case reports of the lesions throughout the body are quite full and they would particularly emphasize the importance of vesicle and pustule formation as well as the formation of parakeratosis in the horny cap. In a case of Wadsack's, gram-negative diplococci were found in one of the lesions, but so far as the authors are aware this is the only case of such findings.—(J. A. M. A.)

Pneumonia: A point never to be overlooked in the treatment of the aged is the changing of position.—(J. L. Spruill, *Charlotte Med. Jour.*)

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Pituitary Extract.

J. J. Mundel, Anacostia, D. C., has collected reports altogether on 5,245 cases of the use of pituitary extracts in labor. He admits that the statistics should not be overvalued as to their importance but says that such as these certainly do give some idea of the effects of the drug. One of the most striking points brought out by his study is that the contents of an ampule, 1 c.c., is much too strong for a single dose and it seems to be the consensus of opinion that $\frac{1}{2}$ c.c. is sufficient and may be repeated frequently, but he has observed himself that the first dose usually reacts best. Repetitions may be at thirty to fifty-minute intervals.

The action of the drug is to promote and augment the normal rhythmic contractions of the uterus, not causing a long continuous contraction like ergot. Failures can be accounted for by inertness of the extract and sterilization of the hypodermic syringe in alcohol is said to counteract the action of the drug. Its action on blood pressure is only a slight temporary rise but it is inadvisable to give it in conditions where high pressure exists, like nephritis, eclampsia, etc. It is generally conceded that to give pituitary extract in the first stage of labor is bad obstetrics. Its field of usefulness is in secondary inertia during the late stages of the second stage of labor in multiparas. "An ideal case for its use would be a healthy multipara with a history of previous normal labors, late in the second stage of labor, when the pains have become slow and weak, owing to uterine inertia, with a normal presentation and with the bag of waters ruptured, with the cervix fully dilated, and with the head molded and through the brim just above a relaxed perineum. In such a case the baby will usually be born in a remarkable manner after its administration." In this type of case it frequently replaces the low forceps operation, detaches the placenta more quickly, and prevents some bleeding. The administration of an anesthetic when the drug begins to act is good practice and it is well to be prepared with forceps. Occasionally even in these well defined cases delivery may be delayed and the result be bad for the baby. It is entering on dangerous ground to step beyond the above indications and in case of delayed delivery forceps are urgently indicated.

As to the contraindications, any case which does not come in the above category would seem to be an unfit one and its use in primiparas under any circumstances is not altogether safe. All means should be exhausted to arrive at a definite diagnosis of conditions and its use should always be preceded by pelvimetry. During the past two years a number of accidents have been reported. Lacerations are common both of the perineum and cervix and Mundel has collected the reports of twelve cases of rupture of the uterus in 1,293 cases during the past two years, in all of which the use of pituitary extract was improper with one or two exceptions. Numerous cases of asphyxia and fetal death have been reported and he has collected from the literature of the past two years thirty-four cases of fetal death and forty-one of asphyxia resuscitated with difficulty. Brief notes of all these are given. Pituitary extract, he says, has probably a proper place, but for its bad effects on the child, primarily, and on the mother in a lesser degree, it would seem that its field of usefulness is a limited one.—(J. A. M. A.)

Heart Disease.

H. Sewall, Denver, says that, just as civilized mankind harbors almost constantly a more or less latent tuberculosis, so infective disease of the heart provoking no classical symptoms but potential for catastrophe is well-nigh invariable at some period of life. The proof of this can be only established by years of research but there is sufficient evidence to warrant its use as a working hypothesis. Darlington has given statistical evidence that the mortality rate from heart disease is increasing throughout the United States while the general death rate is decreasing. Sewall bases his thesis on the incompleteness of the evidence offered by physical signs of the organic condition of the heart. Necropsy records, including microscopic cultures of the cardiac tissues, must furnish the crucial evidence of the existence of heart lesions, and at present the clinical diagnoses are absurdly insufficient.

Granting a focus of infection in the heart, the teaching of the new science of immunology must lead us to suspect that the vital reactions of the cardiac tissues must be profoundly modified. Even the present crude data points to the conclusion that heart tissue so attacked becomes as it is said "sensitized" to a particular form of poison with which it is inoculated, and therefore abnormally receptive of new accessions of the same poisoning and susceptible to them. The clinical facts, he says, supporting this rule are numberless and nothing, he thinks, could be more fruitful for good than for the student of disease to estimate the "field of physiologic response" in the

hearts of his patients. A number of examples of rapid cardiac disease are given. Another point of contact with tuberculosis is the period of early youth at the time of primary infection and he says that one whose ear is trained to recognize the *lub-dup* of the normal organ in youth can notice the changes in heart signs of most adult persons. A really efficient test of cardiac efficiency involves a study of blood pressure and the state of vasomotor co-ordination by comparing blood pressures in the recumbent and erect postures and he gives a number of points to be noted in cardiac examinations. In chronic cases, which are apt to be overlooked unless previous infection has caused further valvular trouble, he thinks we cannot do better than to act on hygienic hints from our hard won experience with tuberculosis.—(J. A. M. A.)

Specific Anti-Poliomyelitis Serum for Clinical Testing.

Dr. Horace Greeley, of 140 Clinton Street, Brooklyn, offers to the profession for clinical testing, free of charge, a limited amount of horse-serum from an animal immunized with cultures of five strains of the poliomyelitis organism obtained from the nerve centers of victims of last year's outbreak.

The serum has been prepared with the same technique as is employed in the production of anti-meningococcus serum, so successfully used in cases of cerebro-spinal meningitis, and it is hoped will prove effective in reducing the mortality and extent of paralysis in poliomyelitis.

The serum has been tested on dogs with gratifying results, and a similarly prepared serum on a human case (*J. Lab. & Clin. Med.*, July, '17). It possesses the following agglutinative action upon the poliomyelitis organisms used in its production:

AGGLUTINATION OBSERVED AFTER 1 HOUR AT 98° F.

Strain I.....	Complete, in dilution as great as 1 to 1600
Strain II.....	Complete, in dilution as great as 1 to 800
Strain III.....	Partial, in dilution as great as 1 to 1600
Strain IV.....	Complete, in dilution as great as 1 to 1600
Strain V.....	Complete, in dilution as great as 1 to 800

Attention is called to the use of normal horse serum, during last year's epidemic, with good results—see articles in (*J. A. M. A.*, Vol. LXVIII, pages 24) (Nuzum), 817 (Zinger), 994 (Amoss), 1153 (Draper), 1531 (Neustaedler and Banzhaf); (*J. Exp. Med.*, April, 1917) (Amoss). Thus one may expect nothing but good results from the use of serum from a specifically immunized horse.

Knowledge of the action of other specific sera in nerve-center lesions indicates that intraspinal injections should be used, of like amounts, and with like technique, as commonly recommended for the treatment of cerebro-spinal meningitis. As with the infections compared, the earlier in the course of the disease the serum be employed, the greater the opportunity for beneficial results as, after destruction of definite portions of the nerve-centers has occurred, even complete removal of the infecting organisms could not remove the paralysis.

The serum will be supplied in vials of 25 c.c. and should be used on the day obtained, intra-spinally.

For Gonorrhea.

The Intravenous Products Company, manufacturer of Guaio-dine, now supplies free with each 1-oz. or larger bottle, a soft rubber tip with metal sleeve, which will fit any standard hypodermic syringe, for the administration of Guaio-dine in treating gonorrhea or other affections of the urethral canal. While intended primarily for use in the treatment of gonorrhea, urethritis, cystitis and similar infections, Guaio-dine also is extensively used in the treatment of ulcers, abscesses, glandular affections, furunculosis and myotic diseases with peculiarly gratifying results.

Guaio-dine is a colloidal iodine preparation suspended in oil containing 7 per cent. of iodine together with a therapeutic dose of Guaicol. In using Guaio-dine in the treatment of gonorrhea the usual urethral method of application is followed. However, some physicians are reporting very good and much quicker results where the injection of Guaio-dine is retained in the urethra, if it is not too sensitive, for a period of an hour or more. This is best accomplished by sealing the meatus with a small piece of previously warmed Z-O adhesive. Information concerning any of the specialties manufactured by The Intravenous Products Company will be supplied from the main office of the company or any of its branches, which have been established in many of the principal cities. Samples also may be secured for trial by the physician.

Eclampsia: Bleeding before or after delivery, followed by normal salt solution with soda, intravenously, subcutaneously or by colon, dilutes toxins and relieves urgent symptoms very promptly.—(A. B. Somers, *Med. Herald.*)

You Can Prepare the Carrel-Dakin Solution

When you master the Carrel technique for the sterilization of wounds by the method of intermittent saturation of dressings, you need have no difficulty in preparing the Carrel-Dakin antiseptic solution.

Dr. Alexis Carrel, by establishing a hospital in New York, is instructing the surgeons of the Army and Navy and of civil practice in the Carrel technique.

CHLORIN-SODA AMPOULES

Johnson & Johnson

Johnson & Johnson, by their method of encasing liquid chlorin in sealed glass ampoules, are offering surgeons the perfect process of preparing the Carrel-Dakin solution.

The Johnson & Johnson method takes advantage of the use of liquid chlorin, which presents radical advantages over the bleaching powder heretofore used. The instability and uncertainty to which bleaching powder is heir are avoided.

Each ampoule contains the exact amount of liquid chlorin required to produce one liter of the Carrel-Dakin solution and is accompanied by a tube of sodium salts exactly pro-

portionate to the amount of liquid chlorin.

Simply dissolve the contents of the ampoule and of the tube in water and in a few seconds you produce the Carrel-Dakin antiseptic solution of standard strength of between 45% and 50% of sodium hypochlorite.

All settling, decantation and filtering to eliminate lime sludge is avoided; the solution is exact and definite; no analysis is necessary. Light and ordinary temperature conditions do not affect it. The solution is ready for immediate use. You may absolutely rely upon its being the same every time.

SEND FOR DESCRIPTIVE CIRCULAR

Johnson & Johnson have issued an eight-page illustrated circular describing the Carrel-Dakin method of wound sterilization and the Johnson & Johnson method of making the Carrel-Dakin solution.

The methods which are described have been abridged from the writings of Drs. Carrel, Sherman, Lyle and others. A copy will be sent to any physician upon request.

Chlorin-Soda Ampoules, Johnson & Johnson, may be obtained through physicians' supply houses and the drug trade

Johnson & Johnson

New Brunswick, N. J., U. S. A.

For the Clogged Liver.

When the liver does not act as it should, the zest of life departs, and the saying that "life and living depend upon the liver," although somewhat facetious, contains more than a modicum of truth. An engorged liver, of course, signifies that the organ requires active stimulation, especially when the condition is attended by manifestations of auto-toxemia. If any one fact has been more definitely established than another it is that such stimulation should not be brought about by the use of drastic cathartics, for if so, the remedy is frequently worse than the disease in its sinister effects. What is particularly needed is a means of stimulation which will satisfactorily increase the functional activity of the liver, without setting up catharsis or over activity of the bowels.

The above needs are well met by Chionia, an exceedingly effective and reliable preparation of *Chionanthus Virginica*. This well known product exerts a distinctly specific action on the liver and is probably one of the most efficient remedies at the command of the physician for stimulating the hepatic function. Administered in regular and appropriate dosage it increases the flow of bile, relieves congestion of the biliary passages, promotes digestion, and although it cleanses the intestinal canal it accomplishes this without purging or griping.

Heart Troubles.

Numerous persons, especially those of middle age and past and who live a sedentary life, suffer from worrying heart symptoms. As a rule, no organic lesions can be detected, but the functional disturbances which are generally in evidence, are a source of constant alarm. Oftentimes, a person's life is made a burden by the pain and other sensations which affect the heart.

A therapeutic remedy which will give tone to the tired heart, but which will not act as a spur is needed. The heart requires persuasion instead of driving. Cactina Pillets will not only effect this object but possess the great advantage over the majority of heart remedies—that they have no cumulative action. Consequently, there is no safer heart tonic known than Cactina Pillets.

The Rational Treatment of Atonic Dyspepsia.

Glandular inactivity of laziness is probably the chief cause of the various manifestations of dyspepsia and indigestion. In such cases of dyspepsia and atonic indigestion, in which the glands of the stomach are not doing their full share of work, and the muscular insufficiencies which eventually result are in the making, instead of giving muscular stimulants like strychnia, one should try to promote the work of the glands by using a recognized secretum like Seng. This well known product of the laboratories of the Sultan Drug Co., St. Louis, Mo., is a remarkably efficient stimulant to the gastric glands. The simplest test will prove its value, and show the wisdom of aiding and promoting physiologic functions rather than to supply substitutes. The usefulness of Seng has been demonstrated in all forms of atonic indigestion, particularly those incidental to neurasthenia, general debility and protracted convalescence from fevers, surgical operations and so on.

The Treatment of Malignant Growths.

The attention of the medical profession is being directed to a new treatment for malignant growths by Frederick Dugdale, M. D., 372 Boylston Street, Boston.

The Dugdale Treatment, which is said to be the result of twelve years of clinical experience, depends for its success chiefly on the virtues of a highly refined creosote obtained by a special process of distillation.

In this preparation creosote is combined scientifically with hydrocarbon and essential oils in a way to produce bactericidal and germicidal properties of the highest value. It can be administered either by intracellular or intramuscular injection or by the mouth, and can also be used as a local application.

It is claimed that the Dugdale Treatment not only assists body metabolism through its action on cell physiology, but also increases both the hemoglobin content of the blood and the number of corpuscles. It is also said that doses sufficiently large to affect tissue metamorphosis can be administered without stomach disturbances.

A Handy Method for Preparing Carrel-Dakin Solution.

The practice of the Carrel-Dakin method of wound sterilization is no longer confined to large hospitals possessing the facilities for the preparation of the Carrel-Dakin solution. Realizing that the exceptional conditions required were not available to most hospitals and practitioners, Johnson & Johnson, of New Brunswick, N. J., have met the situation by

developing a process for preparing the Carrel-Dakin solution which is at once practical and usable under all conditions.

The Johnson & Johnson method takes advantage of the use of liquid chlorin, which is chemically pure chlorin in its anhydrous form, compressed and liquefied. This is a clear yellow liquid (pure chlorin) which will not change or deteriorate under the influence of light or heat, no matter how long it may be kept in storage. The method is adaptable to hospital and field use, as well as to ordinary office practice.

Physicians who want to keep informed on the new advance of surgery should send to Johnson & Johnson for their illustrated eight-page circular which fully describes this new method of preparation and also describes the Carrel-Dakin method of wound sterilization. The methods given for the use of the solution have been abridged from the writings of Dr. Carrel, Dr. Sherman, Dr. Lyle and others.

The Treatment of Hemorrhoids.

Many and various are the local remedies recommended for the treatment of hemorrhoids, but clinical experience has demonstrated conclusively that Medeol Suppositories will produce results in rectal affections when all other measures prove valueless. As a cleanly and convenient means of relieving the pain and soreness of hemorrhoids, fissures and ulcerations they are unsurpassed. A suppository inserted morning and night for a week will control inflammation with gratifying promptness, and not infrequently remove the hemorrhoids entirely.

It is not claimed, however, that Medeol Suppositories will make operation unnecessary in every case of hemorrhoids, but it has been shown beyond all question that they will accomplish more than any other local remedy, especially in relieving pain and allaying rectal irritation and distress. Medical men who are not familiar with the exceptional value of the Medeol Suppositories should send for sample to the Medeol Co., Inc., 802 Lexington Avenue, New York City.

Test for Nervous Syphilis.

J. A. Cutting, Agnew, Calif., reports on the use of a new mastic test for nervous syphilis. While working with the colloidal gold solution, Emmanuel sought to find a substitute which could be more easily prepared and with less possible error. Mastic which had been shown by Neisser and Friedman and others to be similar in action on albumin to colloidal gold was chosen and in order to try out the reaction Cutting has made mastic tests on the spinal fluid of 200 different patients at the Agnews State Hospital. In each case he made a cell count and in 100 cases the butyric acid test was used and in thirty cases the Lange reaction was also used. The Wassermann test was used in all. The mastic reaction was found to be a very delicate one if tap water was not employed. Even washing the test tubes with tap water prevented it. In seeking to find a reagent which could be used with distilled water to hold the salt and mastic in solution and which would be of universal adaptability, he finally found that a very dilute solution of potassium carbonate met all the requirements.

He relates an experiment to show the advantages of this modification and gives his technic in full of the mastic test. The tabulation of the 200 mastic examinations shows that the test was made in a large proportion of all types of insanity and an analysis of its results in the different forms is given with the text. Thus far his work was confined to insane cases. What the action will be in diseases such as poliomyelitis and tuberculous meningitis needed further investigation. His conclusions are as follows: "The mastic test, when taken together with the history and with the cell count, is of undoubted aid in the diagnosis of syphilis of the nervous system. By the addition of potassium carbonate, the degree of positiveness can be graded very accurately. By first incubating and then centrifugalizing, the test can be completed in two hours. It parallels quite closely the colloidal gold reaction and is more easily interpreted and much more easily and quickly performed. In eighty-four cases of syphilis of the nervous system, the mastic test was uniformly positive."—(J. A. M. A.)

Uric Acid Calculus.

A. R. Stevens, New York, reports a new method of diagnosis by roentgenography of uric acid calculus based on the dilation of the ureter in which the urate stone appeared in the roentgenogram as a vacuole in the dense shadow thrown by thorium injected in the ureter.—(J. A. M. A.)

Many forms of skin disease react readily to ultra-violet light, particularly lupus, syphilis, alopecia areata, acne vulgaris and rosacea, and certain forms of rodent ulcer, nevus, eczema and psoriasis.



PROPERTIES consist of 30 buildings—accommodations for 1,200 patients—20 acres of beautiful shady lawns—model dairy—extensive farm and greenhouse systems—pure artesian water supply—large staff of specializing physicians, nurses, dietitians, physical directors and general assistants—wholesome, nutritious bill of fare—thoroughgoing diagnostic methods—complete, modern therapeutic equipment—splendid facilities for outdoor recreation.

THE BATTLE CREEK SANITARIUM

Box 335 Battle Creek, Michigan

HAY FEVER Successfully Treated with Bacterial Vaccines

POLLEN irritation and breathing of the hot dust laden atmosphere favors the development of pyogenic bacteria in the respiratory tract which then become a primary factor of the disease.

Experience shows that the immunizing influence of an appropriate bacterin will either cure the disease or so modify it that it causes but little distress. Use Sherman's Number 40.

Write for literature.

MANUFACTURER
OF
BACTERIAL VACCINES
G. H. SHERMAN M.D.
Detroit, Mich.
U.S.A.
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A Typhoid Carrier Problem

H. F. Senftner, Berkeley, Calif., gives an interesting account of a study of the causes of an epidemic of typhoid in Bakersfield, Calif., where the infection was traced up to a typhoid carrier. He deduces the following lessons from it: "To insure safety, two measures already adopted by some municipalities are imperative: the licensing of persons who are connected in any manner with the handling of public or private milk supplies only after thorough and repeated blood and feces tests to exclude the typhoid carrier, and the penalizing of any person who shall violate such ordinance. Still another lesson, and this more especially for the laity, is that before investing means and time in the establishment of a dairy farm and dairy route, it would be well first to ascertain one's qualifications from the standpoint of health in connection therewith or face a possible alternative of being declared a typhoid carrier by legal authority and having to sell out at a loss, because of inability to engage further in the production or handling of milk and its products. Then again, there is the lesson for the community that it so support its local health department financially as well as legally that ample time may be devoted to the recording of all necessary data in relation to dairy and milk inspection and the compilation of all sources and changes in the milk supply of the city. The importance of making an immediate memorandum of the family supply of milk by the attending physician in any suspected case of typhoid is also to be emphasized."—(J. A. M. A.)

Furuncle.

W. Bartlett, St. Louis, offers the following treatment for solitary furuncle, a condition in which, he says, trauma always plays a definite role in its incipency and this is the reason why it is more frequent in males than in females. On the first appearance of symptoms the lesions should be protected with a bunion plaster or vaccination shield, and not be picked or touched with the fingers or exposed to injury from rubbing. It should be exposed to the sunlight or incandescent electric light as much as possible and acetylsalicylic acid in doses from 5 to 10 grams is useful in limiting spontaneous pain at this stage. If the boil is not aborted by these measures, one should wait till a definite pustule has developed; then infiltrate a definite ring of 0.5 per cent. novocain in the surrounding healthy tissue, adding four drops of 1:1000 epinephrin solution to the solution used, and after pain has been completely stilled the boil should be opened widely by a crucial incision made with a very thin platinum electrocautery blade. If sufficient time has elapsed to ripen, the core can be lifted out at once, but if not, gentle suction should be employed every hour or so with a suction apparatus, the wound being merely covered with a vaccination shield and exposed to an incandescent light. If the lesion is on the back of the neck and any kind of circular bandage used, painful pressure and massage of the wound are unavoidable and it may be further said that any form of dressing makes a pus poultice and accounts for many infections and secondary boils. This treatment can be carried out by any intelligent person, and if carefully done will cause great relief. Bier's suction rapidly reduces the edema in adjacent muscles and relieves the disagreeable stiffness of the neck.—(J. A. M. A.)

Blood Pressure Registration.

An automatic method of prolonged serial blood pressure registration in man is described by Bernard B. Fantus, Chicago, who in connection with Dr. Otis M. Cope of the physiologic department of the University of Michigan has elaborated what he thinks is a successful apparatus and method. The description of the apparatus is given in full. Its essential portion is a rotary valve which takes care of the rhythmic inflation and deflation of the sphygmomanometer cuff while it simultaneously opens the tambour space of an Erlanger arrangement during the inflation and deflation and closes it at the time of recording. The method of use of the apparatus is fully described but does not lend itself to abstracting, being rather technical. Fantus concludes as follows: "An apparatus having been devised whereby it is possible to obtain graphic records of human blood pressure for considerable periods of time, it will probably be found useful not only in physiologic, physiologic and pharmacologic research, but also in clinical medicine, in diagnosis as well as in treatment. For instance, it might be of diagnostic as well as of therapeutic importance to differentiate between those cases of high blood pressure that respond in a typical manner, to nitrite and those that do not. In critical operative cases, the continuous recording of blood pressure during the anesthesia might be of help to the surgeon."—(J. A. M. A.)

Food and Bullets.

The war has given a tremendous importance to the whole subject of diet. Food ranks almost with bullets as a vital factor in the great struggle, and efficient utilization of the crops is just as necessary as big harvests. The Carnegie Institute of Boston is to conduct a series of experiments this fall to demonstrate whether men and women cannot maintain their powers on a smaller ration than has hitherto been accepted as the minimum. The Battle Creek Sanitarium has just finished a metabolism experiment lasting forty-five days, with ten subjects. The object was to determine the effect of different diets on the chemical composition of the blood. The results have not yet been tabulated.

For Uterine Inflammation.

Any preparation that has stood the test of time and been employed by hundreds of doctors for upwards of thirty years, may be assumed to have merit.

The doctor therefore, is warranted in including Micajah's Medicated Wafers among those therapeutic agents that he feels can be depended upon to secure results.

Physiologically considered, mucous membrane inflammation or irritation is easily produced and hard to subdue. This is particularly true of the vaginal tract. It does not require a great amount of such irritation or inflammation to produce symptoms which are extremely annoying and which reflexly affect the mental as well as the physical well-being of the sufferer.

Agents therefore, which tend to combat inflammation, soothe irritation, overcome hypersecretion, and exert germicidal action, may be depended upon to prove of service, and for these reasons, Micajah's Medicated Wafers should be kept in mind by all physicians who study the comfort of their patients and the means by which even comparatively insignificant irritation or inflammation can be controlled or cured.

The Treatment of Rabies.

The treatment of rabies is essentially preventive since there is no known cure for the disease once symptoms have developed. Rabies may be prevented, during the incubation period, in persons bitten by rabid animals, by prophylactic injections of attenuated rabies virus.

Harris' modification of the Pasteur treatment for the prevention of rabies is prepared by Eli Lilly & Company of Indianapolis. By means of this virus a high degree of immunity can be established in fourteen days, and by the family physician, doing away with the necessity of the patients leaving home and obviating any loss of time and great expense.

The virus is the brains and spinal cords of animals dead from fixed virus inoculation. This virus is ground to a paste, frozen, pulverized and rapidly dried in vacuo. The powder is sealed in vacuo and stored in the cold.

The virus is supplied in syringe containers emulsified and ready for use. All that is necessary for the physician to do is to place an order with the druggist who will telegraph the nearest Lilly depot. The first three doses will be promptly available and thereafter one freshly prepared dose will arrive daily for eleven days, thus completing the treatment in fourteen doses, one daily. The dosage is standardized in units, the virus is non-toxic and the treatment free from complications.

An interesting booklet on "Rabies and Its Treatment" will be sent to readers of this journal on request made to Eli Lilly & Company at Indianapolis.

An Efficient, Non-Irritating Local Analgesic.

Analga (Walker) meets the demand for an efficient, non-irritating local analgesic in ointment form. It obviates the need of caution where the surface is inflamed or broken and is indicated in many conditions where such areas are involved.

Where the skin surface is cracked or abraded, in conditions associated with itching or burning and where local inflammation is present, its pronounced refrigerant action followed by a grateful sense of warmth yields marked analgesic and healing effect. It is indicated in inflamed conditions of the rectum and may be applied directly to the nasal mucous membrane. In catarrhal congestions of the ear, nose and throat it should be applied to surrounding skin surfaces using friction.

The exceptional character of its base facilitates and increases its action. Together with remarkable ability to pass through the pores Lanolin (animal) nourishes and preserves the tissues. Its relatively higher commercial value is proportionate to its obvious advantages over vegetable and mineral ointment bases. It ensures fullest efficiency and minimizes the usual ointment disadvantages.

Physicians desirous of investigating the efficiency of Analga (Walker) will be mailed a six-dram tube on receipt of professional card. Inquiries should be mailed to Walker Manufacturing Co., Buffalo, N. Y.



In the Hospital and Sanitarium

KORA-KONIA has proven its efficiency and dependability in a great variety of ways. Nowhere is this more marked than through its use in the Hospital and Sanitarium in the hands of the exact Doctor or the careful Nurse. As a treatment in the prevention of bed-sores and like irritations of the skin and for all cases where an efficient dusting powder of dependable uniformity and chemical correctness is required—it never disappoints.

KORA-KONIA is an aid in the treatment of contused, minor or slow-healing wounds, chafing, burns, scalds, abrasions, eczema, intertrigo, minor operations, dermatitis, as an after suture dressing and for moist or discharging surfaces.

KORA-KONIA is an absorbent, non-irritating, haemostatic, mildly astringent and antacid powder having definite mechanical and therapeutic value. Aids in granulation. Cooling and soothing.

Supplied by your Druggist—25 cents
Test-it-yourself-package—Free by writing to

THE HOUSE OF MENNEN NEWARK. N. J.

Hay Fever To the Initiated

Suggests Escharol

The results obtained warrant its use in every case of ROSE or HAY FEVER, and all Hyperplastic conditions of the Nasal Mucosa.

It relieves Hypersensitiveness and makes unnecessary the removal of the patient from the influence of pollen and other emanations which act as exciting causes. A TRIAL WILL CONVINCE.

Samples to the Profession on Request

LATO PHARMACAL CO., 15-25 Whitehall St. New York



Diabetes.

L. Jonas and O. H. P. Pepper, Philadelphia, report a case of acute diabetes of a type which they claim has received inadequate attention. It is of considerable interest on account of the almost unprecedented elimination of nitrogen during the early fasting days after admission. For the first six days after admission the daily average of nitrogen elimination was 34.8 Gm., while the intake during this period was only 24.16 Gm., showing a great loss of nitrogen. This is a greater excess of elimination than in the case reported by Geyelin and Du Bois while the elimination of ketone bodies by the patient was high and approached that reported by Geyelin and Du Bois. They emphasize the fallacy of basing prognosis solely on the degree of elimination. Finally they call attention to the methods of treatment and their success.

Improvement seemed to commence with the change from the strict starvation treatment to the daily administration of moderate quantities of carbohydrate and this method was continued until there was a distinct improvement in the acidosis. At the same time large amounts of sodium bicarbonate were given both by mouth and intravenously. As improvement appeared and the ketone elimination decreased, the carbohydrate was gradually replaced with protein and fat until the diet became practically the routine carbohydrate-free diet, while the urine became sugar-free and the acidosis disappeared. "After the patient had been sugar-free for a short time, carbohydrates were again tentatively added to his diet in small amounts, without causing the appearance of the glycosuria. The degree of tolerance exhibited was marked, and on discharge the patient was receiving such considerable amounts of carbohydrate without glycosuria as to suggest that his tolerance had been restored about to normal. The blood sugar had returned to a normal figure (0.07 per cent.) before discharge.—(J. A. M. A.)

Adenocarcinoma.

R. R. Simmons, Columbia, Mo., reports a case of adenocarcinoma of the breast in a boy of thirteen. There had been no history of malignant disease excepting that one aunt died of a cancer of the uterus at the age of 35. About a year ago the patient was struck with a baseball bat in the breast. The blow was light and caused no immediate soreness but a little later he noticed after exertion a burning and stinging sensation in that direction and swelling became noticeable before he was seen by the surgeon. A tentative diagnosis of chronic mastitis was made, and the patient prepared for early operation. The entire gland was removed with the surrounding fatty tissue, approximately 8 cm. across and about 1.5 cm. thick in the center.

There was no enlargement of the axillary glands. The left breast was examined about one month after the examination and showed some enlargement but permission for operation was not given. The axillary glands were not enlarged on that side. The pathologic report showed an adenocarcinoma of the breast of the medullary type. Similar cases are exceedingly rare and cancer in the breasts of children under fifteen of either sex are exceedingly infrequent. The trauma in this case is of interest, though it possibly may have been a coincidence. The case illustrates the importance of early diagnosis of these unusual cases and their early and complete removal. The age should not exclude the possibility of a neoplasm in either sex until microscopic examination has shown the true nature of the tumor.—(J. A. M. A.)

Selfish interest and commercialism have no place in medicine. Today we demand loyalty and devotion to duty.

Typhoid Fever.

Attention is directed to a timely announcement which appears elsewhere in this journal over the signature of Parke, Davis & Co., and bears the caption "Typhoid Fever." Prophylaxis, diagnosis and treatment, in logical sequence, are briefly and comprehensively considered in this advertisement.

Typhoid Vaccine, Prophylactic, is suggested as a suitable immunizing agent. This product is a twenty-four-hour culture of the typhoid bacillus, grown on inclined agar and suspended in physiologic salt solution to which has been added 0.2 per cent. trikresol as a preservative. It is accurately standardized. That this vaccine confers immunity from typhoid fever has been shown by an abundance of clinical evidence.

In the diagnosis of typhoid fever the Typhoid Agglutometer has undoubtedly done much to popularize the Widal test and to extend the usefulness of that valuable diagnostic aid. Parke, Davis & Co. supply two forms of the agglutometer, designated as No. 1 and No. 2. Directions for use accompany each outfit.

For the treatment of typhoid fever Typhoid Phylacogen is an agent of established value. A marked effect of its use in all favorable cases is an early subsidence of the fever and a prompt establishment of convalescence. The technique of dosage and other particulars of the treatment are covered in Parke, Davis & Co.'s literature on Typhoid Phylacogen.

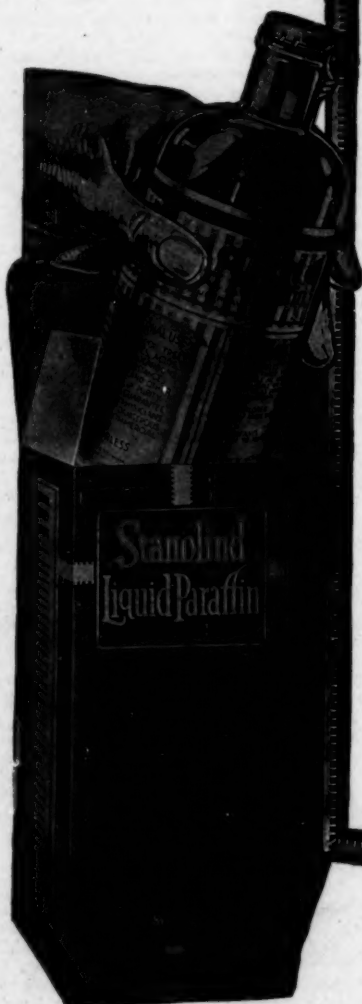
Luetin Reaction.

In view of the desirability of a more exact cutaneous test for syphilis, H. N. Cole and H. V. Paryzek, Cleveland, review the record of the luetin reaction and report their investigation to determine especially whether the luetin reaction in non-syphilitic persons is specific for potassium iodid or whether other substances may have a similar reaction. This, they say, is a matter of some interest from a diagnostic standpoint, for evidently the presence of all provocative substances should be avoided. As suggested by Dr. Sol'mann, a better knowledge of the luetin and related actions may aid in giving a better understanding of the mechanism of iodid action in syphilis and iodism. Incidentally, they also gathered information as to the frequency of the occurrence of the luetin reaction in normal persons controlled by the Wassermann test, and on the influence of the dosage of the iodid.

Their experiments substantiated the work of Sherrick, Kolmer and others, that (1) some nonsyphilitics respond to luetin spontaneously, and (2) in those nonsyphilitics who do not respond spontaneously, the reaction can generally be provoked by iodids. They also experimented on other drugs closely related to the iodids, such as the bromids and nitrates, with more or less success in producing the reaction. The summary of their results is given as follows: "Out of thirty-nine cases tested by the luetin reaction, two normal persons gave pustular reactions to the control test. Among eighteen taking potassium iodid, sixteen gave positive reactions, these being most strongly positive in those patients who had received from 200 to 600 grains. This action is found not to be specific for potassium iodid alone, as it was caused, though in a lesser degree, by iodium bromid in three cases tested, by potassium nitrate in six out of eight cases tested, and by calcium bromid and by sodium iodid each in one case tested. In a future communication we expect to publish the results of our experiments with organic iodine compounds. Perhaps then we shall be in a better position to draw some conclusions as to the action of iodine and as to the syndrome known as iodism."—(J. A. M. A.)

Answer the call of duty. Volunteer as a surgeon in the Army or Navy.

Stanolind
Trade Mark Reg. U. S. Pat. Off.
Liquid Paraffin
(Medium Heavy)
Tasteless—Odorless—Colorless



Before Operation

Stanolind Liquid Paraffin is an ideal laxative for surgical practice.

When used in the proper dose, it thoroughly empties the alimentary canal, without producing irritation or other undesirable effects.

It is particularly valuable in intestinal surgery, because it leaves the stomach and bowels in a quiet state, and because its use is not followed by an increased tendency to constipation.

After an abdominal operation, one or two ounces of Stanolind Liquid Paraffin may be given through a tube while the patient is still under the anaesthetic, or as an emulsion, an hour or two later.

Stanolind Liquid Paraffin is essentially *bland* in its action, causing a minimum amount of irritation while in stomach or intestine. It may also in most cases be gradually reduced without apparently affecting the frequency of the evacuations.

A trial quantity with informative booklet will be sent on request.

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Pyloric Stenosis.

J. L. Ransohoff and P. G. Woolley, Cincinnati, report a case of congenital pyloric stenosis illustrative of the value of the Ramstedt partial pyloroplasty. The patient, however, died of thymic disease seven months later and the necropsy gave an anatomic proof of the perfect efficiency of the Ramstedt operation, and the futility of numerous modifications which only complicate it without improving it. They call attention to the association of enlarged thymus with congenital pyloric stenosis, which they have observed in another of their cases which yielded to Roentgen therapy. The prevalence of enlarged thymus, they say, has been greatly underrated and its frequency probably best explains its not uncommon association with pyloric stenosis. In any case it is not unwise, they say, to be on the lookout for enlarged thymus which, when diagnosed, is so readily curable by Roentgen ray treatment.—(J. A. M. A.)

Intracranial Pressure.

L. H. Landon, Pittsburgh, says that while lumbar puncture has become almost a routine procedure, to the thoughtful observer the slipshod methods usually employed for this purpose are unsupportable. The flow from a lumbar puncture is dependent on many factors: the caliber of the needle; the possible partial occlusion of its tip by membranes or nerves; the position of the patient, and the individual judgment of the observer and hydrostatic pressure. However, if the patient remains in a constant position it will continue the same under all these circumstances but its accurate estimation is possible only with some form of manometer. These have been heretofore too cumbersome for common use. Moreover, the lack of formulated and standardized rules for their use has led to widely varying statements of the normal pressure and caused such confusion that they are practically useless.

Landon describes an instrument that he has devised to overcome these difficulties, consisting of a small mercury manometer with a corrected scale graduated in millimeters up to 70, attached between the arms and which can be adjusted so that the zero mark can be placed at the mercury level. The other details are described and the instrument is illustrated. Certain standard conditions have been found necessary for securing uniform and comparable pressures. The patient must always be in a lying position with the cerebrospinal axis as nearly as possible horizontal with the table or bed. Any variation will affect the accuracy. He gives an illustration to show the advantages of this position. From a large number of observations he has found that normal intracranial pressure varies from 8 to 12 mm. of mercury, with an average nearest eight. Anything above 12 mm. is suspicious, abnormal pressure varies from only slight rises to enormous tension, especially in acute meningitides, in which the patients succumb from the high tension as much as from acute toxemia.—(J. A. M. A.)

Abdominal Hemorrhage.

The first thought of every surgeon in case of severe abdominal hemorrhage, says Emil Novak, Baltimore, is of extra-uterine pregnancy. A recent case however impressed Novak with the fact that grave abdominal hemorrhage is not pathognomonic of ectopic pregnancy. He reports a case in a white girl, aged fifteen, who was taken suddenly with violent pain in the right iliac region with nausea and vomiting. The symptoms were in fact those of acute appendicitis. There was no history of any pregnancy and no pain on the left side. Operation showed that they were dealing with an intraperitoneal

hemorrhage. The right tube was examined and found normal but the left tube showed a dark bluish nodule about 1 cm. in diameter which was assumed to be a tubal gestation though there were no signs of rupture. The right ovary showed on the surface a mound of somewhat ovoid form extending most of its length and evidently a simple follicular cyst which had ruptured at its summit. It was considered inadvisable to resect a portion of the ovary so it was closed with two deep figure-of-eight sutures which controlled the bleeding. In spite of a severe shock at the time of operation, the patient made an uneventful recovery.

A point of special interest in the case was the occurrence of the tiny unruptured tubal pregnancy on the left side which seemed to have no connection with the hemorrhage. Novak goes over the literature briefly and finds one case reported by Hedde of ruptured tubal pregnancy together with ruptured corpus luteum cyst of the tube on the other side. While a number of cases have been recorded of ovarian hemorrhage in connection with intra-uterine pregnancy, this one here reported seems to be the only one in which ovarian hemorrhage occurred together with unruptured ectopic pregnancy. It might be thought that the pregnancy may have had a predisposing influence but it was very small and possibly old and retrogressive. Questioning the patient threw no additional light on the case. The predisposing factors of ovarian hemorrhage, congested conditions of the organ, and free bleeding will depend largely on the location of the follicular structure involved. Trauma has been thought to play a part. There was no sign of a corpus luteum structure in the ruptured follicle. There is nothing characteristic in the symptoms if the rupture occurs on the right side; it may resemble, as in this case, acute appendicitis but perhaps more frequently it is mistaken for ectopic pregnancy; hence the impossibility of always diagnosing the condition with precision, but its possibility should be kept in mind in cases of supposed acute appendicitis in women.—(J. A. M. A.)

Hook Worm Diseases.

B. E. Washburn, Wilson, N. C., reports the results of experiments conducted in the British colony of Trinidad for determining the efficacy of thymol when administered in capsule form with varying proportions of lactose and with sodium bicarbonate. Each patient was given two treatments a week apart, and the bowel excretions examined after the second. Precautions were used to insure proper conditions and different districts selected for testing. The results are shown in a short table and show that thymol is much more effective when finely pulverized with an equal amount of lactose, but that there was a greater effectiveness with bicarbonate of soda. While the experiments are not extensive enough to absolutely prove the relative merits definitely, the soda and thymol combination was superior. It is much less expensive than lactose, which means a great saving.—(J. A. M. A.)

A man's environment, the conditions under which he lives, his food, clothing, occupation, etc., exert a great influence upon his physical and mental development and activities, and his general health. Very careful attention has been paid by physicians to the consideration of this influence, and to measures which promise amelioration, but it has not been recognized sufficiently that the reaction of the human body to external influences depends very largely upon the conditions of the body itself, its "constitution"—i. e., its inborn inherited potentiality.—H. Drinkwater.